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A Report on the Correlation of Medical Aptitude Test Values, Premedical Records, and Freshman Medical Grades for the Class of 1938, at Emory University

JOHN VENABLE
Assistant Professor of Gross Anatomy, Emory University
Emory University, Georgia

In the fall of 1934, sixty-five (65) men were registered in the freshman medical class at Emory University. Of these, three dropped out during the first two weeks of the quarter, leaving sixty-two (62) men. Forty-nine (49) of these were eligible to enter the second year of medical school. Therefore, 79 per cent of the class of 1938 (not considering those who dropped out during the first two weeks of school) passed into the second year unencumbered, although some of these had re-examinations or additional work to make up in the summer. The remaining 21 per cent fell by the wayside; one student is repeating the year.

This same year 12,779 applicants made 32,321 applications for entrance to 79 medical schools in the United States. Of these, 7,419 (8,854 applications) were accepted, of whom only 6,724 or 90.6 per cent matriculated.[1] Of the excess Emory had her share. Since 1927-28 a "C" average has been required at Emory for entrance into the medical school. There has been no perceptible change in percentage of failures since that time. It does seem, however, that there should be more satisfactory criteria for choosing men from this large number in order that undesirables might be eliminated and the number of failures reduced.

In order to investigate this question, all available data on which one might have judged these applicants has been assembled and an effort made to correlate it. This data consists of medical aptitude test ratings on all men, premedical grades on all men, and their grades for the first year in medical school.

The aptitude test ratings are those issued by the Committee on Aptitude Tests of the Association of American Medical Colleges. These ratings are in the form of percentile grades. Of the sixty-five men entering

1. Zapffe, Fred C.: *J. Asso. Amer. Med. Colleges*, 9:33 (Jan.) 1935.

the freshman class in the fall of 1934, eleven were given the test on the opening day of school. Of these, eight had not previously taken the test; three were repeaters who were given the test again in order to determine what improvement in their aptitude had occurred (as shown by the test) after a year of medical study, even though unsuccessful. Fifty-four students had taken the test during their last premedical year. As a result, each of the sixty-five men in the class had a percentile rating according to the aptitude tests.

In the correlations carried out by the Committee on Aptitude Tests, the men were divided into tenths according to the aptitude test ratings. Because of the small number in this class, it was divided into four groups: (1) those having a national percentile aptitude rating of 0-25; (2) those from 26-50; (3) those from 51-75; and (4) those from 76-100. These are called, respectively, the low quartile, the third quartile, the second quartile, and the high quartile. The class is not equally divided, but there are enough men in each group to make percentage studies fairly comparable. The number in each group is as follows: high quartile, 14; second quartile, 10; third quartile, 26; low quartile, 15.

The premedical records of sixty-five men were procured from the school in which they took their premedical work. In order to equate these grades, a numerical rating was assigned to each letter grade: A,—12; B,—10; C,—8; D,—6; E,—4 and F,—2. The averages for each man were taken (due allowance being made for semester credit and quarter credit) in the following groups: mathematics, physics, chemistry, biology, language (including English, Romance, and classical), and electives.

In tabulating the freshman medical grades of these men, several difficulties were encountered which should be explained at this point. In the chemistry department of the first year, temporary grades are given at the end of the fall and winter quarters, the final grade for each man being that one which is given at the end of the year and which counts for all three quarters. In order to compare chemistry properly with the other work, it was thought best not to consider the final grade only, but to consider also the temporary grades given for the first two quarters' work. Therefore, in the tabulations to follow, a man is considered to have three grades in this department, even though two of them are tentative.

In the gross anatomy department the work is divided into four sections, two of them short (about half a quarter each), and two long (approximately a whole quarter each). In order to make these grades comparable to those of the other departments, the two short course grades were averaged, giving one grade for the time equal to one quarter. Therefore, each man has three grades for each of the three departments in the

first year, these grades being as nearly comparable as is possible in view of the different conditions existing in the three departments. Unless otherwise stated, all freshman grades which were not an unmistakable pass were counted as "F."

In these correlations certain unexpected relationships have appeared. For many of these there are apparent explanations, which, although entirely unpredictable, may, nevertheless, be true. For this reason a note will be made where the divergency occurs, and at the end of the paper these exceptions will be described according to number, not with a view to excusing the unexpected, but in order to explain to anyone interested those factors which seem to have been responsible.

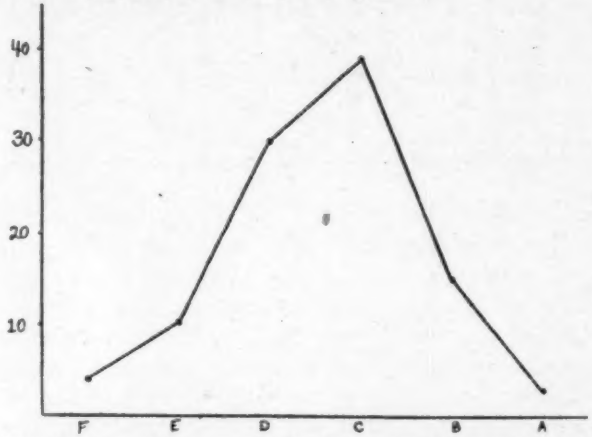

FIG. 1. GRADE CURVE BY PERCENTAGE OF ALL FRESHMAN MEDICAL WORK COMPLETED BY THE CLASS OF 1938.

The sixty-five men on whom this study is based had a percentile average in aptitude rating of 47.6 per cent, whereas the average over the entire country was 52. This figure, of course, refers to those entering medical schools, inasmuch as the average for all taking the test must naturally be 50. Therefore, the class at Emory is slightly lower in ability, as measured by the aptitude test, than the average for all the schools in the country.

Correlation coefficients have been worked out by Professor M. C. Langhorne of the department of psychology at Emory. The Otis correlation chart was used with the following results:

1. Correlation between premedical and aptitude grades, 0.2998 ± 0.009
2. Correlation between premedical and medical grades, 0.3483 ± 0.0830
3. Correlation between aptitude and medical grades, 0.53 ± 0.06

At Emory, men enter the first year of medicine with from two to five years of premedical training. The two year men are, as one might suppose, the exceptional men. Each quartile was divided according to the number of years of premedical training, and the average determined for the aptitude test ratings and the numerical average for the first year of medicine (according to the scale on page 341). A tabulation of these results follows:

	High Q			2nd Q			3rd Q			Low Q			Total		
Yrs Premed.	No. Men	% Apt. Grd.	Med. Aver.	No. Men	% Apt. Grd.	Med. Aver.	No. Men	% Apt. Grd.	Med. Aver.	No. Men	% Apt. Grd.	Med. Aver.	No. Men	% Apt. Grd.	Med. Aver.
2	1	85	8.3				2	41	7.4	1	25	6.9	4	48	7.5
3	5	88	6.4	7	62	8.6	13	35	6.7	5	15	6.5	30	47	7.1
4	5	87	7.7	3	71	8.2	8	36	7.3	4	16	4.2	20	50	6.9
5	2	93	7.3				1	50	7.3				3	79	7.3

It will be noticed that the two year men made better records in the first year of medicine than any other group. These men are exceptional men for the reason that a man with only two years of premedical work will not apply for entrance in competition with better prepared men unless he feels that he is somewhat better than average. Also, the entrance of only average men after two years of premedical work is discouraged at Emory. Another point of interest is that the five year men have the highest aptitude score in each quartile into which they fall. This is to be expected, for a man after five years of premedical work should certainly be able to make a higher score on many parts of the test than others with less work to their credit. When the series has grown to sufficient size, the value of the various parts of the test is to be studied in this relationship.

In order that some indication of the type of work done by the entire class might be obtained, the total number of grades made by the class during the year was arranged in the curve form, by percentages. Study of the curve shown in Figure 1 will indicate that it is a fairly normal one, the percentage of E's and F's practically equaling the percentage of A's and B's. Approximately 14 per cent of the total work was below passing. The highest percentage is that of C. For this curve, only those grades were used which were actually made; that is, only those for courses actually completed by a man. Of those courses there was a total of 512.

In making a comparison of the work done by aptitude quartiles, tabulations were made of all letter grades received by each group. In Figure 2 it will be noticed that all men were counted, even those who dropped out before completing a course. These were obviously not passing grades, and were, therefore, counted as F's. In other words, those men dropping out before completing the first course are considered as having failed all courses, just as if they had remained during the entire session and failed all of the work taken. In these tabulations a peculiar fact appears in a number of places, viz., that the second or second highest quartile has a decidedly better record than the first or highest quartile (Exception 1.).

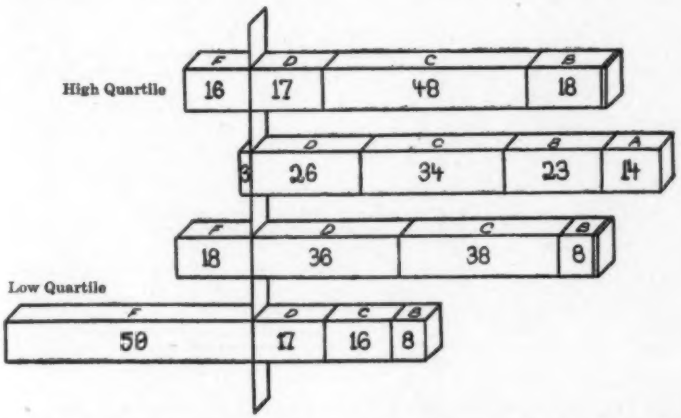

FIG. 2. DISTRIBUTION BY PERCENTAGE OF THE FRESHMAN MEDICAL GRADES EXPECTED OF THE APTITUDE QUARTILES OF THE CLASS OF 1938. ALL COURSES OF THE SIXTY-FIVE MEN ARE INCLUDED, THOSE MEN WHO DROPPED OUT BEING CONSIDERED AS HAVING FAILED ALL WORK NOT COMPLETED.

In Figure 2 it will be noted that 59 per cent of the work expected of the men in the low quartile was below a passing grade, while only 18 per cent of the work in the third quartile, 3 per cent of the work in the second quartile, and 16 per cent of the work in the high quartile fell below a pass. Also, 14 per cent of the expected work of the second quartile was of "A" quality, while only 1 per cent of the work expected of both the high and the third quartiles was of similar rank. There was no "A" work produced by the low quartile.

Figure 3 is merely a modification of the preceding figure in that only those courses which were actually completed by students are considered, the seven men who dropped out for various reasons having been disre-

garded. In other respects, the two arrangements are exactly the same. Approximately 38 per cent of the work completed by students in the low quartile was of less than passing quality, while 12 per cent of the work in the third quartile, 3 per cent of the work in the second quartile, and 10 per cent of the work in the high quartile was below passing grades. The "A" work remained in the same percentage as in Figure 2.

Other rather interesting relations may be found in the figure, but they will not be discussed. More than 40 per cent of the F's in the high quartile were made by one man (Exception 2). More than 50 per cent of the B's in the low quartile were also made by one man (Exception 3). It is of particular interest, however, that of all of the work expected of

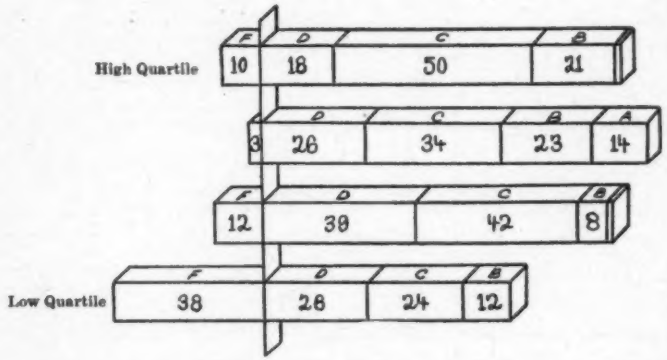

FIG. 3. DISTRIBUTION BY PERCENTAGE OF THE FRESHMAN MEDICAL GRADES COMPLETED BY EACH APTITUDE QUARTILE IN THE CLASS OF 1938

the low quartile approximately three-fifths was deficient, and that of all of the work completed by the low quartile approximately two-fifths was deficient, a little better than three times the proportion in the next or third quartile.

Interest was aroused by the findings as to how the letter grades would be distributed among the quartiles. For instance, what proportion of all the F's was made by the low quartile? In view of the fact that the number of men in the different quartiles varied, it was necessary to convert them all to values for numerically equal groups. Therefore, each group of grades was multiplied by a factor converting them into the number which would have been made had the group contained 100 men and the same ratio been maintained between the grades. The percentage of each letter grade made by each quartile was then calculated and tabu-

lated diagrammatically in Figure 4. The column of blocks to the left represents the grades made by the high quartile, followed by those made by the second, third, and low quartiles. Each horizontal row of blocks represents all of the grades of that letter which were made, all horizontal rows of blocks adding up to 100 per cent.

It will be noticed, among other things, that 53 per cent of the F's were made by the low quartile, whereas the next highest was 22 per cent made by the third quartile. Thus, it appears that in this series somewhat more than one-half of the F's were made by the low quartile. The largest percentage of D's was made by the third quartile, the largest percentage of C's by the high quartile, and the largest percentage of B's and A's by

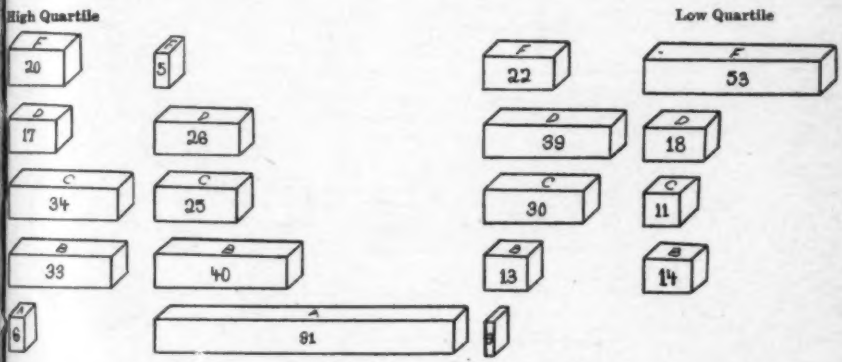

FIG. 4. DISTRIBUTION BY PERCENTAGE OF "A," OF "B," OF "C," OF "D," AND OF "F" IN EACH APTITUDE QUARTILE OF THE CLASS OF 1938. THIS SHOWS THE PERCENTAGE OF THE TOTAL NUMBER OF ANY ONE GRADE WHICH WAS MADE BY EACH QUARTILE. ALL QUARTILES WERE FIRST CONVERTED TO EQUAL NUMBERS FOR COMPARATIVE PURPOSES.

the second quartile. It should be remembered that this table shows only the proportion (corrected as for equal groups) of the total number of each letter grade which would have been made by each quartile if the groups had been of equal number, whereas Figures 2 and 3 show the percentages of the different letter grades made by each single quartile.

The men in the class were divided according to their premedical grades into quartiles, which will be called premedical quartiles. The premedical and aptitude quartiles had five men in common, three of whom dropped out before completing work and two of whom made all F's throughout their stay. No other quartile had this many men in common. Although it is impossible to work out premedical quartiles until after the class has been selected, this tabulation is of some interest. The results of the com-

pilation of grades made by men in each of the premedical quartiles are shown in Figure 5, which is the same type of table as Figure 3.

Most striking is the similarity between all quartiles in their freshman medical accomplishments. The percentage of each letter grade in the four quartiles is approximately the same. In no way can any predictable value be derived from these tabulations. It seems that unselected groups of men would not make more similar records than these groups which were divided according to premedical records. One might expect this in view of the fact that there is poor correlation between aptitude grades and premedical records.

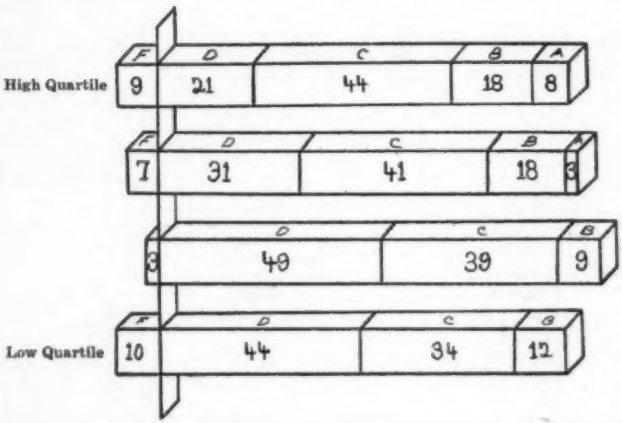

FIG. 5. DISTRIBUTION BY PERCENTAGE OF FRESHMAN MEDICAL GRADES MADE IN PREMEDICAL QUARTILES.

The object of this study is, as before stated, to attempt to predict a man's probable outcome before his entrance into medical school. In order to do this, one must use only those facts which are obtainable at the time a man applies for entrance. The material in Figure 5 was obviously not available at that time and is, therefore, inserted here only as a matter of interest. The premedical records, however, are available. Exactly how to evaluate these records is quite a problem. Emory requires a "C" average for all applicants, but this does not mean that all grades shall be as high as C. In order to determine as nearly as possible which particular departments in college are most closely correlated with medical work, the premedical grades of all students were averaged for six general divisions of work, as stated previously. Under each of these heads the men were divided into three groups: one group in which the grade for that division

of work was F-D; another, C, and the third, B-A. Under each of these groups all grades made by those men in medical school were tabulated. The grades were then changed to percentages. Both tabulations may be seen in Table 1. The following facts are worthy of note: in the department of mathematics, one-fifth of the grades made by the men in the first two groups (that is, men with grades below B), were F's; in physics, all grades made by men with a physics grade lower than C were F's, although there was only one man in this category; in chemistry, one-fifth

TABLE 1.

Accomplishments in Medical School of the Three Groups of Men with Premedical Average of below C, of C and above C.

MATHEMATICS

	NO. GRADES MADE			PERCENTAGE		
	F-D	C	B-A	F-D	C	B-A
A		4	11		4	4
B	14	15	46	13	15	15
C	28	38	134	26	39	45
D	45	22	85	41	23	28
F	21	18	31	20	19	10
Men	12	9	43			

PHYSICS

	NO. GRADES MADE			PERCENTAGE		
	F-D	C	B-A	F-D	C	B-A
A			15			5
B		19	56		11	18
C		79	121		42	39
D		69	83		32	27
F	6	31	33	100	15	11
Men	1	22	41			

LANGUAGE

	NO. GRADES MADE			PERCENTAGE		
	F-D	C	B-A	F-D	C	B-A
A		8	7		4	3
B	2	22	51	6	10	19
C	8	89	103	23	41	39
D	14	67	71	40	32	27
F	11	28	31	31	13	12
Men	4	25	35			

CHEMISTRY

	NO. GRADES MADE			PERCENTAGE		
	F-D	C	B-A	F-D	C	B-A
A		1	14		1	5
B	5	20	50	14	11	17
C	11	67	122	31	35	42
D	16	61	75	44	33	26
F	4	38	28	11	20	10
Men	3	22	39			

BIOLOGY

	NO. GRADES MADE			PERCENTAGE		
	F-D	C	B-A	F-D	C	B-A
A			15			4
B	3	7	65	15	5	19
C	9	51	140	50	33	41
D	4	53	95	22	35	28
F	2	40	28	11	27	8
Men	2	19	43			

ELECTIVES

	NO. GRADES MADE			PERCENTAGE		
	F-D	C	B-A	F-D	C	B-A
A		5	10		2	3
B		30	45		14	15
C		74	126		35	43
D		70	82		33	29
F	6	34	30	100	16	10
Men	1	25	38			

of the grades made by men having a C in chemistry were F's, whereas those made by both the lower and higher men were only about one-tenth F's; 27 per cent of the grades made by biology "C" men were F's, whereas lower and higher men had only about one-eighth F's; for the elective group the results are very similar to physics.

In these tabulations only those men completing medical work are counted. Forty-six per cent of all deficiencies made during the first year

of medicine were made by the men having less than a "C" average in any one or more of these divisions. The percentage of the total number of deficiencies made by men with less than a "C" average in the various departments follows: mathematics, 30; physics, 9; chemistry, 6; biology, 3; language, 16; electives, 9. These are not to be compared with the figures in Table 1, for there the percentage of all grades made in each division is indicated, whereas this tabulation refers to the percentage of the total number of failing grades (medical school) made by the men below C in each of the six divisions. There is some overlapping, some men having less than a "C" average in more than one division, so that the total is not the sum of all the departmental percentages.

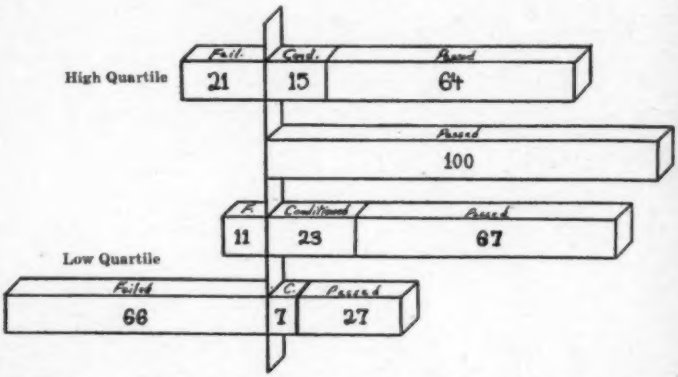

FIG. 6. FINAL CLASSIFICATION OF MEN IN THE APTITUDE QUARTILES, BY PERCENTAGE, AS TO WHETHER THE YEAR'S WORK WAS FAILED, CONDITIONED OR CLEARLY PASSED. ALL CONDITIONS WERE EVENTUALLY REMOVED BY PASSING RE-EXAMINATIONS AFTER FURTHER STUDY.

Thus far, the correlations have been carried out for the grades on courses, but some indication of the results of the year's work for individuals was desired. For this purpose the men were tabulated in each quartile according to whether they failed the year, or conditioned work which was made up in the summer, or passed the work and gained a promotion into the sophomore class. All conditions were raised to D's by re-examination.

The results of this study are shown in Figure 6. This figure shows the outcome of the men in each quartile. It will be noticed that two-thirds of all the men in the low quartile failed to pass the freshman work and were dropped from school. Approximately one-fifteenth had conditions which were satisfactorily removed by re-examination after additional

study. Four-fifteenths had no deficiencies. In terms of number of men, ten failed, one conditioned, and four passed the work of the freshman year. From this it can be gathered that a man in the low quartile had one chance in three of becoming a sophomore.

In Figure 7 the number of men passing, conditioning, and failing the work are distributed by percentage according to quartiles, after correcting the difference in numbers. It will be seen that two-thirds of all failures were made by the low quartile, one-ninth by the third quartile, and two-ninths by the high quartile. The low quartile presented one-sixth of the conditions and only a little better than one-tenth of the passes. Other

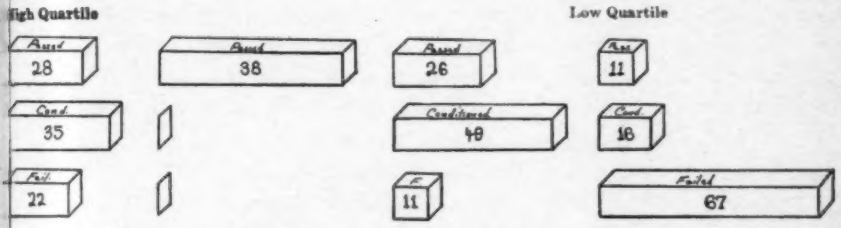

FIG. 7. DISTRIBUTION OF THE FAILURES, THE CONDITIONS, AND THE PASSES ACCORDING TO THE PERCENTAGE OF EACH IN EACH QUARTILE.

interesting facts may be learned from this figure, but overshadowing all else is the fact that had the low quartile been kept out of school, two-thirds of the failures would have been eliminated at the expense of only one-tenth of the passes (four men) and one-sixth of the conditions (one man). In other words, ten failing men would not have wasted the time and resources of the class at the expense of only five sophomores, one of whom was obliged to make up conditioned work during the summer.

EXCEPTIONS

1. Although the second quartile in this study contains the fewest men (10), it is apparently made up entirely of that type of man who works very little in the college and yet makes grades above the average. Having not been extended at all, the aptitude test can well be below that of the high quartile, but after entering medical school and becoming oriented, the true worth of the man appears. For instance, in one of the departments one of these men made D on the first division of work and then A on the remainder of the work. The men in the high quartile give the impression of being of that type which works hard in the college and makes excellent grades, but at the expense of a man's entire effort. On

entering medical school, these men, although still expending every effort, do not fall in the group of best students, although they are, as a rule, average or better.

2. More than 50 per cent of the F's in the high quartile were made by one man. This man is of the type which can, after work with a book, start out on a repetition from memory and recite the material almost word for word until interrupted, after which he must start again from the beginning. He has comparatively little understanding of the meaning. It is relatively easy to comprehend how a man of this type might make good grades in premedical school and a good grade on the aptitude test (especially in some parts), but do very poor work in medical school where there is a very great need for proper correlation and manipulation of facts. It is hardly likely that illness had a bearing on this particular case, although psychoneurosis may have played a part. This man, however, had permission to repeat the year, although he is not in the succeeding class.

3. Somewhat more than 40 per cent of the B's in the low quartile were made by one man. This man is a good student, but of a nervous temperament. He becomes tremendously excited during quizzes. It seems that his low aptitude test score could very easily have been a result of nervous tension or a "don't care" attitude. His record for the year was six B's and three C's, which is decidedly above the average.

SUMMARY

The aptitude test grades, the premedical grades, and the freshman medical grades for sixty-five students were collected and an attempt made to correlate them. It is realized that this number is entirely too small to arrive at final and definite conclusions. It is felt, however, that certain of our inferences should bear a great deal of weight, even though they will undoubtedly have to be modified when the series grows to sufficient numbers. It is hoped that this study can be continued for at least five more years, thereby increasing the number of men to about three hundred.

CONCLUSIONS

The series on which this paper is based is too small to warrant specific conclusions. The purpose of the paper is primarily to show what is being attempted at Emory toward a more efficient method of determining a man's aptitude for the assimilation of medical knowledge. The following statements, therefore, apply only to this one class. It is felt that they may represent trends which will either be proved or disproved when the series has grown to a sufficient size.

1. The class of 1938, Emory University School of Medicine, is somewhat below the average for all medical schools in medical aptitude test values.

2. Correlation of freshman medical grades with medical aptitude test grades show a correlation coefficient higher than freshman medical grades with premedical grades and premedical grades with aptitude grades.

3. The group having percentile scores of from 51 to 75 on the aptitude test have decidedly better records in this series than any other group.

4. The group having percentile grades of from 0 to 25 are decidedly weaker men than any other group.

5. There is, apparently, important and valuable predictive value in aptitude test grades which, it is hoped, can be definitely determined when the study includes a greater number of men.

Number of Physicians and Others Connected with the Faculties of the Medical Schools of the United States and Canada

FRED C. ZAPFFE
Secretary, Association of American Medical Colleges,
Chicago, Illinois

Incidental to a study in progress, the opportunity was presented to ascertain how many physicians and others are connected with the teaching staffs of the medical schools of the United States and Canada.

UNITED STATES: The total number of teachers in the medical schools of the United States for the college year 1935-1936 was 15,243, in all ranks and grades, physicians and others. Technicians, numbering 177, are not included in this figure because they do not hold any degree and in all probability do not do any active teaching.

Of the 15,243 teachers, 2,594, or 17 per cent, are charged to the preclinical subjects; 12,649, or 83 per cent to the clinical subjects. Professorial rank is held by 5,611, or 36.81 per cent of all teachers. In the preclinical subjects there are 1,174 teachers of professorial rank, or 22.75 per cent; in the clinical subjects, 4,437, or 79.25 per cent.

It is interesting to note that 13,642, or 89.5 per cent, of all teachers hold the M.D. degree. Only 1,419 of these, or 10.3 per cent, are connected with the preclinical departments, representing, however, 54.7 per cent of all preclinical teachers. In the clinical field, 12,223 teachers hold an M.D. degree, or 89.7 per cent of all teachers who are physicians. There are 426 teachers assigned to clinical work who do not hold an M.D. degree. Perhaps, they should not have been charged to clinical subjects but when the subject is roentgenology, or immunology, or serology, or biophysics, etc., it is, perhaps, perfectly proper that such a charge be made. In this evaluation, the so-called medical sciences were kept strictly apart from any subject which was in some way connected definitely with clinical work.

There are listed 5,027 teachers of professorial rank, or 36.8 per cent of all teachers who are physicians or who hold the M.D. degree. Of this number, 707, or 14.1 per cent, are listed as teaching in the preclinical subjects; 4,320, or 85.9 per cent, are clinical teachers. The remaining 8,615 teachers holding the degree of M.D. hold a rank below the grade of professor; 712, or 18.5 per cent, are assigned to preclinical subjects; 7,903, or 81.5 per cent, to clinical subjects.

TABLE 1. TEACHERS OF ALL RANKS IN THE MEDICAL SCHOOLS OF THE UNITED STATES. TOTAL: 15,243.

Preclinical Subjects: 2,594 (17%) Clinical Subjects: 12,649 (83%)

Rank	Preclinical	Clinical	Total
Professors	525	942	1467
Research Professors	2	1	3
Clinical Professors	0	683	683
Associate Professors	254	740	994
Assoc. Clin. Profs.	0	364	364
Assistant Professors	393	1065	1458
Ass't. Clin. Profs.	0	638	638
	1174	4437	5611
	22.78%	79.25%	36.81%
Lecturers	37	308	345
Associate Lecturers	0	1	1
	37	309	346
Instructors	595	3860	4455
Ass't. Instructors	19	78	97
	614	3938	4552
Associates	97	878	975
Research Associates	28	4	32
	125	882	1007
Assistants	344	2566	2910
Research Assistants	26	12	38
Teaching Assistants	1	0	1
Laboratory Ass't's.	1	0	1
Voluntary Ass't's.	3	0	3
Student Ass't's.	66	0	66
	441	2578	3019
Demonstrators	30	205	235
Ass't. Demonstrators	6	55	61
	36	260	296
Fellows	134	227	361
Research Fellows	15	3	18
Teaching Fellows	9	2	11
Courtesy Fellows	6	0	6
	164	232	396
Residents	2	9	11
Ass't. Residents	0	4	4
	2	13	15
Tutor	1	0	1
Totals	2594	12649	15243

Technicians: 177 (not counted in any rank)

Teachers holding the Ph.D. degree number 697, or 4.58 per cent, of all teachers. Professorial rank is held by 440, or 57.4 per cent; 385, or 87.5 per cent, teach the preclinical subjects, 55, or 12.5 per cent, clinical subjects. The remaining 257, or 42.6 per cent, hold ranks below a professorship; 197 in the preclinical subjects; 60 in clinical subjects.

TABLE 2. TEACHERS OF ALL RANKS IN THE MEDICAL SCHOOLS OF THE UNITED STATES HOLDING THE M.D. DEGREE. TOTAL: 13,642.

Rank	Preclinical	Clinical	Total
Professors	343	891	1234
Research Professors	1	1	2
Associate Professors	143	732	875
Assistant Professors	220	1022	1242
Clinical Professors		678	678
Assoc. Clin. Profs.		364	364
Ass't. Clin. Profs.		632	632
	707	4320	5027
	14.1%	85.9%	36.8%
Lecturers	23	248	271
Assoc. Lecturers		1	1
Instructors	366	3774	4140
Ass't. Instructors	13	76	89
Associates	64	860	924
Research Associates	6	4	10
Assistants	156	2467	2623
Research Assistants	7	6	13
Voluntary Assistants	2		2
Demonstrators	29	202	231
Ass't. Demonstrators	6	55	61
Fellows	32	194	226
Research Fellows	5	2	7
Teaching Fellows	1	2	3
Residents	2	8	10
Ass't. Residents		4	4
	712	7903	8615
Totals	1419	12223	13642
	10.3%	89.7 %	89.8%

Degrees of A.B., B.S., M.A., M.S. and other degrees are also represented on teaching staffs. In 132 instances, no degree is stated, even in professorial ranks. Whether this means that the teacher does not hold a degree, or whether it is an omission cannot be determined. However, the number is too small to alter any of the figures to an appreciable degree. There are 144 teachers in this entire group; 82 in preclinical subjects,

holding professorial rank, and 62 in the same rank in the clinical subjects, a total of 144. Of lesser rank, there are 760 teachers; 511 in preclinical and 760 in clinical subjects. The total for this entire group is 904.

CANADA: The total number of teachers in the medical schools of Canada is 849. Of these, 235, or 27.7 per cent, are teaching preclinical sub-

TABLE 3. TEACHERS OF ALL RANKS IN THE MEDICAL SCHOOLS OF THE UNITED STATES HOLDING THE PH.D. DEGREE ONLY. (697).

Rank	Preclinical	Clinical	Total
Professors	150	23	173
Research Professors	1		1
Associate Professors	96	5	101
Assistant Professors	138	23	161
Clinical Professors		1	1
Assoc. Clin. Profs.		2	2
Ass't. Clin. Profs.		1	1
	385	55	440
	87.5%	12.5%	57.4%
Lecturers	8	5	13
Instructors	105	14	119
Ass't. Instructors	1		1
Associates	18	8	26
Research Associates	13		13
Assistants	16	14	30
Research Assistants	3	3	6
Fellows	28	16	44
Research Fellows	5		5
	197	60	257
	76.6%	23.4%	42.6%
Totals	582	115	697
	83.5%	16.5%	4.58%

jects, and 614, or 72.3 per cent, clinical subjects. Of the whole number of teachers, 391, or 46.0 per cent, are of professorial rank; 147, or 37.6 per cent, in preclinical subjects, and 244, or 62.4 per cent, in clinical subjects. Of those in the lower ranks (458), 88, or 10.3 per cent, are assigned to the preclinical subjects and 370, or 89.7 per cent, to clinical subjects.

Of the whole number of teachers, 737, or 86.8 per cent, hold the M.D. degree; 157, or 21.3 per cent, teaching preclinical subjects, and

580, or 78.7 per cent, clinical subjects. Professorial rank is held by 320, or 43.4 per cent; 93, or 29.0 per cent in the preclinical departments and 227, or 71.0 per cent, in clinical departments. Of those holding lower ranks (417), 64, or 15.3 per cent, are assigned to preclinical subjects and 353, or 84.7 per cent, to clinical subjects.

TABLE 4. TEACHERS OF ALL RANKS IN THE MEDICAL SCHOOLS OF THE UNITED STATES HOLDING DEGREES OTHER THAN M.D. OR PH.D. OR NONE (904).

Rank	Preclinical	Clinical	Total
Professors	32	28	60
Associate Professors	15	3	18
Assistant Professors	35	20	55
Clinical Professors		4	4
Assoc. Clin. Prof.		2	2
Ass't. Clin. Prof.		5	5
	82	62	144
Lecturers	6	55	61
Instructors	124	72	196
Assistant Instructors	5	2	7
Associates	15	10	25
Research Associates	9		9
Assistants	172	85	257
Research Assistants	16	3	19
Teaching Assistants	1		1
Laboratory Assistants	1		1
Student Assistants	66		66
Voluntary Assistants	1		1
Demonstrators	1	3	4
Fellows	74	17	91
Research Fellows	5	1	6
Teaching Fellows	8		8
Courtesy Fellows	6		6
Residents		1	1
Tutor	1		1
	511	249	760
Totals	593	311	904

Only twenty-five teachers hold only the Ph.D. degree (3.0 per cent) and they teach only preclinical subjects. Twenty-two of these teachers hold professorships.

The teachers holding degrees other than M.D. or Ph.D. (or none)

TABLE 5. TEACHERS OF ALL RANKS IN THE MEDICAL SCHOOLS OF CANADA. TOTAL: 849.

	Preclinical	Clinical	Total
Professors	82	79	161
Associate Professors	30	31	61
Assistant Professors	35	51	86
Clinical Professors	0	41	41
Assoc. Clin. Profs.	0	31	31
Ass't. Clin. Profs.	0	11	11
	147	244	391
	37.6%	62.4%	46.0%
Lecturers	19	104	123
Instructors	22	47	69
Assistants	13	53	66
Student Assts.	1	0	1
Research Assts.	0	2	2
	14	55	69
Demonstrators	33	121	154
Ass't. Demonstrators	0	34	34
	33	155	188
Research Fellows	0	9	9
Totals	235	614	849

TABLE 6. TEACHERS IN THE MEDICAL SCHOOLS OF CANADA HOLDING THE M.D. DEGREE. TOTAL: 737.

Rank	Preclinical	Clinical	Total
Professors	50	77	127
Associate Professors	23	27	50
Assistant Professors	20	48	68
Clinical Professors	0	37	37
Assoc. Clin. Profs.	0	27	27
Ass't Clin. Profs	0	11	11
	93	227	320
	29.0%	71.0%	43.4%
Lecturers	16	96	112
Instructors	14	41	55
Assistants	4	52	56
Student Assts.	1	0	1
Research Assts.	0	1	1
Demonstrators	29	120	149
Asst. Demonstrators	0	34	34
Research Fellows	0	9	9
	64	353	417
Totals	157	580	737
	21.3%	78.7%	86.8%

number only 87, or 10.3 per cent of the total number of teachers. Fifty-three teach preclinical subjects and 34 clinical subjects. Thirty-two hold professorships in preclinical subjects, 17 in clinical subjects.

TABLE 7. TEACHERS IN THE MEDICAL SCHOOLS OF CANADA HOLDING THE PH.D. DEGREE ONLY.

Rank	Preclinical	Clinical	Total
Professors	11	0	11
Associate Professors	2	0	2
Assistant Professors	9	0	9
Lecturer	1	0	1
Instructor	1	0	1
Assistant	1	0	1
	25	0	25
	3.0%		29.5%

TABLE 8. TEACHERS IN THE MEDICAL SCHOOLS OF CANADA HOLDING DEGREES OTHER THAN M.D. OR PH.D. OR NONE.

Rank	Preclinical	Clinical	Total
Professors	21	2	23
Associate Professors	5	4	9
Assistant Professors	6	3	9
Clinical Professors	0	4	4
Assoc. Clin. Profs.	0	4	4
Lecturers	2	8	10
Instructors	7	6	13
Assistants	8	1	9
Research Assts.	0	1	1
Demonstrators	4	1	5
	53	34	87
	60.9%	39.1%	10.3%

Although these data do not contribute anything especially worth while to any problem of medical education, they do give information hitherto not available. There have never been any real figures at hand as to the number of teachers in the medical schools of the United States and Canada although often questions on this point have been asked. The data presented herewith answer these questions and are presumed to be correct. If they are not, the catalogs of the medical schools are wrong.

An Address for Premedical Students*

CLARENCE E. BIRD
Professor of Surgery, University of Louisville School of Medicine,
Louisville, Kentucky

You who are to enter the field of medicine are, of course, ambitious to become good physicians. This is a fortunate circumstance, for by the time you are graduated from the medical school and have passed through the rigorous period of postgraduate training which is necessary for proficiency in any branch, the demand for excellence by both examiners and public will be exacting.

There are many indications that laymen are demanding better physicians. Pediatricians will tell you that the mothers of their patients are becoming extremely well informed in matters pertaining to the physical welfare of their children. The physician who gives castor oil to a child who has a stomach-ache, when instead the appendix should have been removed, is no longer excused either by his fellow physicians or by the relatives of the child. Organization of laymen into groups for the purpose of obtaining medical services is motivated not solely from a desire to pay lower fees but by a feeling that the members of the organizations will be able to obtain better care than individuals who are not so banded together. The public demands straight bones after fractures, the prompt control of epidemics and the best methods of treatment for their injuries and diseases. That a large number of people are avid for news of the progress of medical science is evident from the multiplicity of articles on medical subjects in the lay press.

You ask how to go about it to become first class physicians. Let us begin by assuming that you are fitted both by temperament and education to undertake the study of medicine. Probably many of you have passed the aptitude test with high scores, while others are determined to do well in spite of none too good ratings. The latter group should be encouraged, because these tests have been found grossly inaccurate as a yardstick of ability in many instances. Still, you should be certain that you want most of all to become physicians and that you are not being led into an exacting profession by the wishes of others who may not appreciate as well as you do your shortcomings and desires. In brief, I am taking it for granted that you are making the decision to enter the field of medicine for yourselves, and that you are prepared to become well trained. The path you

*Delivered before the Sigma Alpha (Honorary) Premedical Society, University of Louisville, May 24, 1935.

choose is a difficult one, but, if you follow it intelligently and diligently, it will lead you to greater satisfactions than are to be gained in any other profession or occupation.

It seems to me that your work during the next five to ten years may be made pleasanter and more effective by a consideration of the suggestions which I will make. One of the most essential matters in relation to any scientific study is so obvious that it might easily be overlooked. It is the question of the proper use of the language of science. In the Middle Ages and up until the eighteenth century, scholars wrote in Latin, which was universally understood. Most medical terms are derived from Latin and Greek. They are old and useful and each one carries a definite meaning. If you read a medical book written in German or French or Italian or English, you will find that most of the technical terms have Latin or Greek roots. The languages differ, to be sure, but for each technical expression in one tongue there is an exact and often quite similar equivalent in another. So you see that our technical language has a broad and rather universal background. A definite step in your march toward the goal of becoming a good physician will be made when you learn to think, talk and write in clear terms, utilizing these dependable words exactly, so that your meaning will be unmistakable. As an example of careless expression: we often hear it said that a patient complains of "a pain in the side." Anyone who is at all critical queries immediately, "Side of what? Abdomen, chest, head?" The accurate individual says, "The patient complains of a pain in the right lower quadrant of his abdomen," or "in the right axillary region," or "in the right frontal area." Exact language takes away all of the fog of misunderstanding.

Although not entirely essential, your training will not be well rounded if you neglect foreign medical writings. Every educated European and Asiatic has command of at least two foreign tongues. We, in America, are unfavorably situated geographically for the mastery of foreign languages, but at least you should determine to read fluently both German and French. It is true that almost all modern scientific information is to be found published in English, but if your studies lead you, as they may, into the older writings, your pleasure as well as your effectiveness will be enhanced by your ability to read original works in foreign languages. Translations made by someone else are a poor substitute, because inaccuracies are bound to creep in. Many gross errors traceable to faulty translations are to be found scattered through medical literature.

A further point in this connection is that the reading of foreign articles in the original languages will tend to broaden your outlook and lessen the natural tendency toward provincialism. You will find that there are

seventy-seven approved medical schools in the United States, ten in Canada, and many in foreign lands. Every one of these schools has some distinguishing characteristic. Some are noted for the quality of the training which they provide in the basic sciences, others for their clinical teaching, and many for advances through research, both clinical and laboratory, attributable to their students and teachers. There are also many independent hospitals and practitioners and laboratory workers everywhere who contribute greatly to the sum of medical usefulness. Although scientific facts are inflexible, their applications to medicine are manifold. There are often many ways to accomplish the same purpose; one method may be as sound as another. Learn from the other fellow in medicine.

Possibly more important to you than the matter of provincialism may be the purposeful and continuous filling in of the gaps in your knowledge of the essentials of medicine. The courses in the medical schools have been arranged with a great deal of care, and the subjects broached are valuable. Whether or not, at the moment, a bit of information, a laboratory experiment or a minute dissection seems worth while, always catch the idea, roll it around in your mind, understand it as thoroughly as you can. The work is so planned that these at first apparently isolated exercises lead one to the other, eventually interlocking to make a whole. You should, then, acquire clearly the conception that the later work in a course depends on what has come before; likewise, that a student who is well grounded in the work of the first two years is admirably fitted to undertake the second two years and the problems with which he will be confronted later.

Another consideration may help you to gain a proper perspective as you begin your quest for an adequate training in medicine. Most of the facts which you will learn during your training were made known because of the inquiring interest and investigations of predecessors. Develop a hearty respect for inquisitiveness and research. Early in your medical course pick out some gap in the full knowledge of a subject, become familiar with the sources of information; read on the subject; see if you can figure out a way to solve the problem; work on it. First rate scientific researches have been carried out by medical students, some of them during the first year.

It seems desirable, finally, to call attention to another useful and practical point of view. Medical education and postgraduate training are expensive and will cost you or someone who is interested in you a variable sum which will amount to about twenty thousand dollars. Since the investment in time and money is so great, you will, of course, want to finish your five to ten years of training well equipped to repay in services the principle and interest. If you keep constantly in view that your purpose is

to prepare for later usefulness, examinations in the school and before state and national examining boards will take care of themselves. Caution should be directed against the effort to discover the peculiarities of instructors and to cater to them in order to pass examinations. While you are in the medical school it is to everyone's advantage if you work wholeheartedly toward your own goal. Even when you begin to work in a hospital and assume obligations to your superiors and to the hospital and to its patients, your objective should still be encouraged, because the activities which are best for your own training are almost invariably of advantage to the institution.

CONCLUSIONS

In order to crystallize the thoughts which have been conveyed, it may be useful to summarize. The public and those responsible for medical education and the conduct of practice demand a high degree of excellence from their physicians and those who wish to specialize. You who are about to enter the field of medicine may be aided in attaining the requisite ability by these suggestions. First, learn to think, speak, read and write scientific language accurately; as a minimum, learn to read German and French fluently. Secondly, avoid provincialism in every form; learn from others everywhere. Thirdly, leave no gaps in your understanding of the subjects broached in the courses in medical school; the facts of science depend one on the other. Fourthly, develop a wholesome respect for scientific investigation; be inquisitive and work out your own problems from the first. Finally, plan to prepare yourself to make repayment for your costly medical education by a high quality of service.

The Need for Graduate Training in Physical Medicine

FRANK H. KRUSEN
Section on Physical Therapy, The Mayo Clinic,
Rochester, Minnesota

Physical medicine may be defined as that phase of medicine which deals with the use of the physical, chemical and other properties of radiant energy, and with mechanical agents, electricity, heat, water and other physical agents.

It is at once the oldest and the newest field in medicine. It is the most ancient since these agencies have been used since time immemorial in the treatment of disease. It is the newest since it is only within the past few years that physical medicine has been recognized as a distinct field of medical practice. This phase of medical practice has advanced very recently through the stage during which so-called physiotherapy was practiced rather crudely by poorly trained lay workers, to the stage in which more scientific therapeutic application of physical agents has been made in well-organized hospital physical therapy departments, and finally to the present stage in which the more inclusive term "physical medicine" is being used to describe the phase of medicine in which very accurate application of physical agents for both diagnosis and treatment of disease is practised by well-trained technicians under the supervision and with the assistance of medical men trained in this field. The trend toward the adoption of the new term, physical medicine, was signified by the establishment of departments of physical medicine in certain medical schools in this country, by the changing of the name of the "British Journal of Actinotherapy and Physiotherapy" to the "British Journal of Physical Medicine" and by the organization of groups of teachers in this field, such as the American Society of Physical Medicine and the American Academy of Physical Medicine. The group of physicians who have been assigned by the American Medical Association the task of placing this phase of medicine on a proper basis, however, have maintained the name "Council on Physical Therapy" for their group.

NEED FOR BETTER INSTRUCTION IN PHYSICAL MEDICINE

There is unquestionably a very great need for better graduate instruction in physical medicine. The Committee on Medical Education of the Council on Physical Therapy of the American Medical Association has made the following statement:[1]

"The Committee believes that this is the field which best lends itself to early development and that furthermore there is here a greater necessity for immediate action than under the other heads. The Committee on Education is fully cognizant of the fact that adequate education in this field of therapy can be brought about only by long range planning in respect to undergraduate education as a whole. This point is axiomatic and emphasis made in another direction is not to be interpreted as failure to visualize the fundamental need.

"The situation as regards the use of physical therapy among the practicing profession as a whole throughout the United States is, however, nothing short of deplorable. Large sections of society are at present wholly without advice, not to say practical assistance, concerning measures which often spell the difference between invalidism and health. This fact is perhaps best illustrated in terms of injured or diseased joint structures but has almost equal application in a wide range of other medical and surgical conditions. The Committee thoroughly appreciates that it is futile to expect an adequate grasp of the field of physical therapy on the part of the profession as a whole during the lifetime of the present generation, but it is equally satisfied that much can be done to improve conditions as they now exist."

In a paper which I prepared three years[2] ago concerning education in physical therapeutics I came to the following conclusions: 1. The modern medical school should have a well-organized physical therapy department in its teaching hospital. 2. This department should be under the direction of a well-trained physician. 3. The objective should be to make this physician responsible for the medical school teaching. 4. There are two vicious circles which handicap the development of physical therapeutic teaching: (a) there is an inadequate number of trained instructors, because schools have failed to teach physical therapy, and the schools have failed to teach physical therapy because there is an inadequate number of instructors, and (b) the present organizers of medical curricula are for the most part unacquainted with physical therapeutics, and hence have failed to include it in their program; as the students of the present become the curriculum makers of the future we have a vicious circle. 5. The method of breaking these vicious circles is to train a sufficient number of instructors, and to convince the curriculum makers of the need for inclusion of a course on physical therapeutics.

In the May 23, 1936, issue of the Journal of the American Medical Association a reviewer makes the following statement:[3] "It is unfortunate that physicians in this country utilize physical therapy only meagerly, in spite of the fact that years, even centuries, of experience have shown it to

be perhaps the most effective measure in the treatment of chronic rheumatism. American physicians do not prescribe physical therapy because they themselves know so little about its principles and technic, because there are so few trained physical therapists available to help the physician out, or because they somehow hesitate to use a remedy 'soiled' by the touch of irregular practitioners."

At a recent meeting of the Council on Physical Therapy, Dr. Cutter, Secretary of the Council on Medical Education and Hospitals of the American Medical Association, made the following pertinent statement: "There are not very many schools in which they have men who are really qualified to be set up as the head of a physical therapy department. The solution for that problem is to turn out better trained men in physical therapy and good facilities for graduate training in the field of physical therapy are needed."

The few quotations given above present, I believe, ample proof of the extreme need for the training of a number of highly skilled young medical men in this rapidly developing new phase of medical practice.

DEMAND FOR WELL-TRAINED MEN IN THE FIELD OF PHYSICAL MEDICINE

A well-known New York physician[2] wrote that he had searched for a "salaried, fully trained, full time director" for the physical therapy department of a large hospital in New York, but that "even in this big metropolis, a month's search for such a man has been fruitless." He continued, "neglect of the medical schools to add the subject to the curricula is, of course, to blame."

The Secretary of the Council on Physical Therapy wrote:[2] "The Council is inclined to agree with you that there should be in each medical school a department of physical therapy under a qualified director with its teaching available to all other departments of the school. However, it is impossible to obtain a sufficient number of physical therapists with the comprehensive knowledge required for the adequate teaching of every phase of physical therapy."

Recently a letter was received from a physician in Pittsburgh asking for a physician trained in physical therapy to head a department of physical therapy in a large Pittsburgh hospital. I was unable to suggest a single physician who had had adequate training to fill the position. Less than a month ago I was informed that a large orthopedic hospital in Los Angeles was in need of a well trained young man to head their department of physical therapy, and again I was unable to suggest a physician to fill this post.

TENTATIVE PLAN FOR A GRADUATE COURSE TO PREPARE PHYSICIANS TO SPECIALIZE IN PHYSICAL MEDICINE

Such a course should include:

I. *Training in certain fundamental subjects:*

A. Physics of light, heat, electricity and mechanics, as applicable to physical therapy.

B. Anatomy: Special study of the anatomy of the peripheral nervous system, the muscles, blood vessels, bones and joints, special attention being paid to kinesiology and topographic anatomy; also a study of pathologic anatomy, with particular reference to trauma.

C. Physical chemistry, with special reference to its relation to physical therapy.

D. Physiology of muscle, nerve, blood, circulation and digestion, with particular reference to the application of physical agents for the correction of abnormal physiologic processes and electrophysiology (the physiologic basis of physical therapy).

II. *Training in research:*

A. At least one assigned or selected problem in laboratory research on some subject related to physical therapy. Special research in some such subject as: (1) biophysics in relation to physical therapy, (2) the effects of high-frequency currents on local physiologic processes, (3) the use of interrupted and waved galvanic currents in the production of muscular contractions, (4) problems in the physiologic effects of local or general applications of heat, and (5) studies in body mechanics, and so forth.

B. At least one assigned or selected problem in clinical research on some phase of the clinical application of physical agents. Special clinical research in some such problem as: (1) a comparative study of the surface temperatures produced by the application of various physical heating agents, (2) a controlled clinical study of the effects of local heat in chronic or acute inflammatory processes, (3) a study on the effect of corrective exercises in the treatment of scolioses, (4) a controlled clinical study of the most effective physical measures to be used in the correction of contractures, and (5) a study on the use of hydrogymnastics in the treatment of flaccid paralysis, and so forth.

III. *Actual clinical and hospital training in the study and treatment of patients by various physical agents in the physical therapy department of a teaching hospital:*

A. This should include work in light therapy, thermotherapy, fever therapy, hydrotherapy, electrotherapy and mechanotherapy.

B. In addition to this work in the hospital therapy department there should be assignments or electives in subjects allied to physical therapy, according to the individual wishes of the student when possible, that is, orthopedics, neurology, dermatology, roentgenology, pediatrics, general medicine or surgery, and so forth.

C. During this phase of clinical study the student should prepare, or collaborate in preparing, at least one scientific paper on some subject related to physical therapy in such a manner that it will leave no doubt as to his familiarity with his subject or with its presentation in proper literary style.

D. Training should be given in the art of medical writing, cultural studies in history, foreign languages, literary style, speaking before groups, and so forth.

E. There should be seminars in physical therapy, journal clubs, abstract clubs, and training in administration, record keeping, handling of personnel, medical contacts, and so forth. Training should also be given in the development of new types of physical devices for the treatment of disease.

SUMMARY AND CONCLUSIONS

It is hoped that this brief will serve to emphasize the great need for the training of a number of young physicians to practice physical medicine scientifically in the hospitals of this country and to teach this subject in our medical schools. There were in 1927, according to Peebles,[4] 7,000 hospitals in the United States and 2,100 had physical therapy departments, as compared to 4,000 which possessed clinical laboratories and roentgen-ray departments. Since 1927 many hospitals have either enlarged their departments of physical therapy or have organized new departments. Each of these units should be headed by a well trained physician. A number of medical deans have told me of their fruitless search for a well prepared teacher of physical medicine. The need for such training, therefore, seems obvious.

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New Things Which Should Be Taught in A Course on Professional Conduct and Medical Economics

PARK J. WHITE
Washington University School of Medicine
St. Louis, Missouri

All was not well with the Church at Corinth when Paul wrote, "We shall not all sleep, but we shall all be changed." Text may well be torn from context for application to the state of medical practice today.

Certainly, anyone giving a course in professional conduct and medical economics can neither slumber nor sleep. No course requires more frequent revision. It is the purpose of the present outline to bring the course at Washington University up to date, giving in greater detail the present day status of and attitudes toward contraception, abortion, euthanasia, eugenic sterilization, industrial medicine and contract practice; group hospitalization contracts; recommendations of the Committee on the Costs of Medical Care; Medical Society plans in the United States and the systems of medical practice functioning in England, Germany, Sweden, France and Russia.

If we should let our students graduate without at least stimulating their interest and indicating our own in these subjects,—if we should insist that our time honored individualistic system of private practice is adequate for all classes, we should range ourselves with those who cannot discern the signs of the times.

Our medical students, imbued as they are with the spirit of impartial inquiry, want to hear about birth control, industrial medicine, health insurance,—yes, even the state medicine of the U. S. S. R., without the acrimony so often accorded these topics by organized medical groups.

The "older" part of this course, dealing with our existing American system of practice, its ethical standards, its financial problems, etc., has already been published in detailed outline.[1] Although frequently revised, this subject matter has been presented to the seniors at the Washington University School of Medicine annually since 1923, under the title, "Medical Ethics and Professional Conduct." Since the addition this year of so much more material on medical economics, its title has been changed to "Professional Conduct and Medical Economics," thus avoiding the redundancy of the former title. Let no one infer from this that we have

1. PARK J. WHITE, The Teaching of Medical Ethics and Professional Conduct. *J. Assoc. Amer. M. Colls.*, November, 1932. Same, with discussion, Cambria County Medical Society, Johnstown, Pa., *Medical Comment*, October 1, 1934.

permitted ethics to bow the knee to Mammon! The old principles remain the same. But more space had to be given to modern ideas and practices.

Without further comment, I shall outline the course as presented this year, giving only the new material in detail.

LECTURE 1

Medical Education and the Student's Personality. The Young Practioner.
Habits formed during school and hospital training.

LECTURE 2

Where to Start Practice. Advertising and Salesmanship.
Investigators and Practitioners. Opportunities for Young Doctors.

LECTURE 3

Specialization. The Layman and the Young Practitioner.
Status of Women M.D.'s.

LECTURE 4

Medical Ethics (including discussion of A. M. A. "Principles").
Consultations. Referring Patients. Substituting.

LECTURE 5

Organized Medicine. Physician and Druggist. Physician and Nurse.

LECTURE 6

BIRTH CONTROL (Contraception, prevenception).

1. Need of "Conjugal Hygiene Service" should be appreciated by doctors, and should include
   (a) Sex education for adolescents.
   (b) Engagement and premarital counsel and examination.
   (c) Conjugal adjustment and control of fertility.
2. Opinion sharply divided on sectarian basis, Catholics opposing, Protestants and Jews favoring. Organized medicine tries to evade taking positive stand.
3. Undoubtedly true that it is practiced where least needed. (Corroborated by statistics of families on relief.)
4. "Methods of birth control offer the only relief from the tragedy of abortion." From this point of view alone it is an important maternal health measure.
5. Consider the plight of the unwanted child. Thus it is an important child health measure.
6. Our clinics: Must take only mothers. Refer patients to physicians if incomes exceed $125.00 per month. Cannot be conducted by the community council because of Catholic opposition.
7. Summary of Michael Fielding's "Parenthood: Design or Accident?"
   (a) Birth-control an invaluable contribution to the physical and mental well-being of normal men and women.
   (b) Child bearing riskier than coal-mining.
   (c) "Safe period (Ogino-Knaus)—10 days before menstruation is not always safe.
   Dutch cap, contraceptive jelly, morning douches, safest combination.

(d) Sociologic factors.

England and Wales, 1931.

Middle and upper classes, 98 births per 1,000 married men.
Skilled workmen 141 births per 1,000 married men.
Dock workers 209 births per 1,000 married men.
Infantile death-rate:
Middle and upper, 38 per 1,000 births.
Skilled 77 per 1,000 births.
Dock workers 112 per 1,000 births.

(e) Birth control should help morality by favoring early marriage.

(f) It has reduced the birth-rate among the intelligent. This is an argument for complete birth-control with information given to all, rather than one against voluntary parenthood in general.

8. Raymond Pearl's study of fertility and contraception in urban whites and Negroes. (Science 83: 503 (May 22, 1936.)

(a) In absence of contraceptive efforts, pregnancy-rates are the same.

(b) Among white contraceptors, pregnancy rates are substantially reduced.

(c) Among Negro contraceptors, there is no statistically significant lowering of the pregnancy-rate.

9. Laws concerning birth-control in the U. S. A.

(a) Stringent postal and customs laws of the federal government carry maximum penalties of five years in jail or a fine of $5,000 or both. Federal: Contraceptives are obscenities. (But scientific technic can't be mailed, for it requires physical examination.)

(b) Since 1929, no one has run foul of the law. Millions of dollars worth of contraceptive material shipped annually. Medical books and pamphlets mailed. Tendency is thus to merge health and economic factors.

(c) Section 211, U. S. Penal Code: Unlawful to mail results of birth-control research, or to mail an applicant the address of any legally operating birth-control clinic.

(d) State: In 44 states the law permits a physician to impart contraceptive information to a patient if and when in his professional judgment such information is proper and necessary.
Mississippi is the only state clearly prohibiting a doctor from giving information.
In Missouri a doctor may legally give it but must not publish it.

10. "Organized medicine dodges the issue." (Birth Control Review, June, 1936.)

(a) Committee report, May 12, 1936, convention, A. M. A. "Voluntary limitation of conception may be necessary to safeguard the health of some women . . . Physician should not be criticized for refusing to furnish information . . . Should not dissuade a patient from obtaining contraceptive advice."

(b) No mention of spacing children, of criminal abortion, of maternal deaths, of Ogino-Knaus "safe period."

(c) Disapproves "propaganda to public by lay bodies."

ABORTION. (F. J. Taussig, 1936.)

1. Population of U. S. A. 120,000,000. Birth rate 20 per 1,000. Births 2,400,000 per year. Of total abortions, urban, 42 per cent; rural, 58 per cent. 681,600 (?) abortions per year in U. S. A. Two per cent maternal mortality rate. 4,000 deaths per year recorded. Total probably 8,000?
2. Indications for therapeutic abortion (with consultation).
   (a) Dead fetus (mole, missed abortion).
   (b) Living fetus.
   Numerous maternal diseases (tuberculosis, etc.). Rape. Eugenic factors (insanity? epilepsy?). Social-economic.
3. Surgical and non-surgical methods.
4. Forty years ago, 1 abortion to 7 confinements. Now 1:3. Of total, only 25 per cent spontaneous. 60-65 per cent illegally induced, 90 per cent of these among the married pregnant.
   Abortion is the biggest factor in our high maternal mortality rate. (25 per cent.)
   Over one-half of the illegal abortions performed by physicians, one-fifth by midwives; the rest by the patients themselves.
5. Etiologic faults in the social structure:
   (a) Economic distress.
   (b) Occupational changes. (More women employed.)
   (c) Illegitimacy.
   (d) Domestic relations.
   (e) Fear of confinement.
6. Legal aspects.
   (a) Much depends on whether fetus is viable or not. May be manslaughter, or if mother lives, "felony of abortion."
   (b) Done by licensed doctor after consultation?
7. Theological.
   (a) Catholics of course opposed to death of fetus without baptism. They have some abortion-rate as those of other faiths.
8. Russian experiment with legalization of abortion.
   (a) 91,000 abortions in Moscow in 1931.
   (b) Now, primigravidae not aborted (unless they insist!)
   (c) Done only during the first three months.
   (d) On the walls of abortaria:
   "Let this abortion be the last."
   "Better to prevent than to interrupt."
   "Go to the prophylactarium."
   (e) Abortions have decreased by 10-20 per cent.
   (f) Maternal mortality in Russia (from abortions). (1931)
   175,000 abortions in hospitals, 9 deaths; 53,000 abortions outside hospitals, 16 deaths.
   (g) Sequelae may be bad. Government now favors contraception.
   (h) Of course, fewer secret abortions when legalized.
   (i) Expertly done, usually without anesthetic, Russian mortality-rate less than one-tenth that of Germany.

LECTURE 7

EUGENIC STERILIZATION. EUTHANASIA.

1. Of 125,000,000 people, 25,000,000 are unfit or misfit. Chance of becoming insane is 1:10.
   Feeblemindedness is more hereditary than insanity or criminality
2. Vasectomy and salpingectomy, not castration.
3. We must bear in mind how little we know about heredity, especially with regard to mental and moral traits. Edwardses haven't begotten only superior children any more than the Jukeses have begotten only inferior. And Nordic supremacy is of course a myth.
4. Twenty-seven states may legally practice sterilization.

EUTHANASIA.

1. Killick Millard would let incurables kill themselves. Consider the case of Charlotte Perkins Gilman, who did kill herself rather than permit suffering for herself and her relatives.
2. We know too little to encourage this sort of thing. Consider the man who wilfully "ate as he pleased" although he knew he had diabetes; then a few weeks later insulin was discovered.

QUACKERY, FADS AND CULTS. (Little new material.)

"LEGITIMATE QUACKERY." (Near-fake procedures by the doctors themselves.)
Mentioned to be condemned.

LECTURE 8

THE ART OF MEDICAL PRACTICE. (As before.)

MEDICAL ECONOMICS: STATISTICS ON COSTS OF MEDICAL CARE.

1. Naturally, the less income per capita, the less physicians in proportion to the population.
2. "How necessary is illness?" (R. A. Reynolds.)
   2,000,000 sick at all times with diseases largely preventable.
3. About 1,000,000 persons in U. S. A. devoted to some part of medical service. 121,000 private practitioners. (1929)
4. Of families with income less than $1,200, 46 per cent receive no medical or dental care. Of those with income over $10,000, 14 per cent receive none. No data on Negroes, but conditions vastly worse.
5. Only 21 per cent of city children and 7 per cent rural children are vaccinated against smallpox by the time they are 6.
6. Fifty per cent of families of 2 or more had income of less than $2,000.
7. Costs of medical care are both uneven and unpredictable. That costs are too high for many families does not mean high incomes for the practitioners. The average net income of physicians (1929), $5,300—*very* unevenly distributed. Average general practitioner—under $4,000. Average complete specialist, over $10,000. Free care an unjust burden on either the physician or the overcharged (?) rich.
8. Present system creates incentive to unnecessary operations and visits. Great credit that few yield to the temptation. (Com. on costs of med. care.)
9. National expenditure on physicians compared with that on food, clothing, cosmetics, etc.

PHYSICIAN'S FEES. (Present system.)
As before.

PAY CLINICS AND MIDDLE CLASS PATIENTS.

FREE CLINICS AND POOR PATIENTS.

LECTURE 9

HIGHER FEES.

FEE-SPLITTING.

GETTING BILLS PAID.

DIFFICULT COLLECTIONS.

THE FREE LIST.

All as before, under "existing system."

OUR PRESENT INDUSTRIAL MEDICINE AND CONTRACT PRACTICE.

1. Often quite ethical, even the only way competent service can be provided. (Remote industries, mining, etc.)
2. Contract practice is unfair and unethical when: (A. M. A.)
   (a) Compensation is inadequate on basis of usual fees for same class of work and people in community.
   (b) There is underbidding to secure the contract.
   (c) There is no reasonable degree of choice of physician.
   (d) There is direct or indirect solicitation of patients.
3. Largely limited to payroll class.
4. Uusually not sufficiently supervised or regulated.
5. Often bad commercial practices.
6. Endicott Johnson Workers' Medical Service.
7. University Student Health Services.
8. Group hospitalization contracts.
9. Railroad medical services.

LECTURE 10

SIX ESSENTIALS FOR ANY PLAN PROVIDING MEDICAL SERVICE. Must (Committee on Costs of Medical Care.)

1. Safeguard quality of medical service and preserve essential personal relation between patient and physician.
2. Provide for future development of preventive and therapeutic services for all.
3. Provide services on financial terms which people can and will meet without undue hardship, either through individual or collective sources.
4. Full application of existing knowledge to prevention of disease.
5. Provide for assisting patients in selecting competent practitioners and facilities for medical care.
6. Adequate and assured payment for those who provide the care.

Majority Report (Committee on Costs of Medical Care) Recommends

1. Organized groups of physicians.
2. Extension of public health services.
3. Costs on group payment basis (Insurance or taxation).
4. In education, more emphasis on public health and social medicine.

Principal Minority Group Recommends

1. Government competition in practice of medicine be discontinued except to relieve medical profession of burden of care of the indigent, and except for continuation of army-navy and other services.
2. United attempts to restore the general practitioner to central place in medical practice.
3. Corporate practice of medicine financed by intermediary agencies to be vigorously opposed.
4. Development by state or county medical societies of plans for medical care.

American Medical Association Insists that

1. All features of medical service should be under the control of the medical profession.
2. No third party should be permitted to come between the patient and the physician in any medical relation.
3. Patient must have absolute freedom to choose legally qualified physician.
4. Any method of providing care must retain permanent confidential relation between patient and family physician.
5. All medical phases of all institutions involved in medical service should be under professional control.
6. However, the cost of medical care may be distributed, the immediate cost should be borne by the patient if able to pay at the time the service is rendered.
7. Medical service must have no connection with any cash benefits.
8. Any form of medical service should include all legally qualified doctors in the locality, who wish to give service.
9. Systems for the relief of low income classes should be limited strictly to those below the comfort level.
10. There should be no restrictions on treatment or prescribing not formulated and enforced by the organized medical profession.

Medical Society Plans in the U. S. A. (R. G. Leland, etc.) (Examples.)

1. San Diego Central Clinic Service:
   For indigent, part-pay, full-pay.
2. Wayne County Medical Society Plan. (Detroit.)
   Service bureau like those of Washington, D. C., and St. Louis, Mo.

Municipal Doctor System in Rural Saskatchewan. (C. R. Rorem.)

1. Formerly dearth of physicians, excessive costs because of long distances.
2. In 1930, 20 municipalities employed full-time physicians, 12 made inducement grants of $1,500 per year.
3. Assures medical service. Doctors are free from bill collecting.
4. The taxation basis recognizes differences in ability to pay. Burdens are fairly distributed.
5. Much better preventive work. Medical care regarded as public service.
6. Permitting practice on fee-basis among those not eligible to the service makes temptation to favor private patients.
7. Abuse of salaried doctor discouraged by public opinion.

English System.

1. People acknowledge their responsibility for medical care of the poor sick.
2. Relatively successful. Quite expensive. 15,000,000 employed persons come within scope of National Insurance Act. (1911.)
3. It is industrial insurance rather than public health insurance. Employer and employee share cost.
4. Every registered practising doctor eligible for list.
5. Average gross income from panel practice $2,500.
6. Patients too often certified as sick. Much supervision required.
7. A physician may refuse to accept an applicant.
8. Rules protecting physicians against unnecessary night calls, and fining physician if he neglects patients.
9. Many are getting attention who didn't get it before.
10. Patients are seen earlier. More preventive work.
11. Often no confidence in panel physician.
12. System of supervised midwives. They attended 61 per cent of all births in England in 1927. Very low maternal mortality.

LECTURE 11

GERMAN SYSTEM. (1929.) (A. Newsholme.)

1. Special doctors for the poor have been replaced partially by insurance doctors.
2. Hospitals chiefly national or municipal, aided by insurance agencies.
3. Inadequate coordination between national, insurance and private work.
4. Maternity.
   (a) Deaths from puerperal sepsis 6.4 per 1,000 births. 75 per cent from abortions.
   (b) In Prussia, 90 per cent of births attended by midwives.
   (c) Importance of welfare-centers, school doctors, etc.
5. Sickness-insurance funds.
   (a) Naturally interested in preventive work.
   (b) Anti-tuberculosis work transferred to public health authorities. (Absurd to divide between insured and non-insured here.)
   (c) Fight between Berlin Municipality and the Artzebund over treatment of venereal disease patients. (Fear of encroachment on private practice.) (10 per cent?)
6. Sickness and Invalidity Insurance.
   (a) Great dissatisfaction on all sides.
   (b) Very little private practice.
   (c) Now 70,000 secretaries of the sick-funds.
   (d) Earlier diagnosis. Helps recent graduates, but puts a third party between doctor and patient.
   (e) No incentive to get well—yet doesn't favor too early return to work.
   (f) Doctors' waiting room filled during industrial strikes.
   (g) Through funds, doctor gets 9,000 marks per year.
   (h) 27,000 official employees for the 29,000 doctors in the work. "Eternal writing."
   (i) Even with drawbacks, most of Germany (i. e. the poor) would be helpless without social insurance.

(j) Dr. Liek of Dantzig (bitter critic of German system) advises making each doctor a state official. He would lose his freedom but this is already gone. Hospitals have broken the back of private practice.

(k) Note how Streicher denounces Virchow, Koch, Wassermann!

Sweden.

1. Both Sweden and Denmark have hospital systems supported out of taxes. Payment to some extent is within the means of a majority of the population.
2. Venereal disease treated free regardless of ability to pay.
3. Sickness insurance is voluntary.
4. 2,200 doctors, or 1:2,900 population.

France.

1. Too many private societies giving public help, in child birth, puericulture, tuberculosis, venereal disease.
2. France is getting into line with other countries which have adopted compulsory sickness insurance.
3. Bad tuberculosis facilities. Insurance should not try to substitute for public health work. High cost of excessive officialization.

Russia. (See Kingsbury, New Repub., April 5, 1933.)

1. In 1913 general death rate 28.3 per 1,000. Then war, famine, 2 revolutions. In 1926 death rate 20.9 per 1,000. Moscow, 1913, 23.1 per 1,000; 1926, 13.4 per 1,000.
2. Great increase in hospital facilities, preventive medicine, health education.
3. To 165,000,000 Russians the state must be God.
4. Permitting 5,000,000 peasants to starve in 1933 for refusal to socialize farms didn't help death rate.
5. Soviet Union is the one nation which has undertaken to set up and operate a complete organization designed to provide complete preventive and curative medical care for every man, woman, and child within its borders.
6. Tuberculosis, for example, not such an economic disaster as in U. S. A. More likely to be discovered early. Better after-care.
7. Great need for more doctors. 125,000 medical posts to be filled. Remember under the Czar, 1 physician to 50,000 population in some areas.
8. Government now supports 97 per cent of medical students through medical school. On graduation each one is sent to a rural district. In 1928, 44,800 doctors in Russia, 1:14,000.
9. Description of illustrative clinics.
10. Social insurance in Russia. (Newsholme and Kingsbury.)
    (a) Sickness. Permanent incapacity. Maternity. Unemployment (practically none). Old age. Burial.
12. Infant mortality. (European Russia.)
    1913—275 per 1,000; 1930—141 per 1,000.
12. Physicians. (76,000 in 1931.)
    (a) Removed from monetary competition.
    (b) Hastily trained, or recruited by committees.

(c) Hardly any private practice. Much work by midwives and feldschers. Badly overworked.

(d) "Deprived" (disfranchised) classes may not get free treatment.

(e) Medical practice largely concentrated in clinics and hospitals, many of them connected with factories.

(f) "Liquidation of prostitution." Reclamation. Prophylactoria.

(g) In U. S. S. R. hardly any quackery or self-medication. Drugs very scarce and costly.

(h) Decree of September 3, 1934: Minimum 5 year course. Increased pay for medical school training staff. Poorer schools to be eliminated.

(i) Some physicians get 600-700 rubles per month ($120-$140). A few from 1 to 5,000. Ruble supposed to be 87c. Now 20c.

(j) People with higher incomes get much better medical service, even in Russia.

We all have much to learn from the U. S. S. R. where alone State Medicine is practiced.

Students are urged to read:

1. Principles of Medical Ethics—A. M. A.
2. Trades and Professions—George H. Palmer.
3. Aequanimitas and Other Addresses—William Osler.
4. Doctor and Patient—S. Weir Mitchell.
5. The Young Practitioner—Oliver Wendell Holmes.
6. Life of Pasteur—R. Vallery-Radot.
7. Autobiography—Edward L. Trudeau.
8. Dr. Serocold—Helen Ashton.
9. The Story of San Michele—Axel Munthe.
10. International Studies on the Relation between the Private and Official Practice of Medicine—A. Newsholme.
11. Red Medicine—A. Newsholme and J. A. Kingsbury.
12. Medical Care for the American People—Committee on the Costs of Medical Care, University of Chicago Press, Chicago, 1932.
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5. Preparation for the Study of Medicine.—Stuart Graves, J. A. M .A., 98:1496 (Apr. 23), 1932.

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1. Parenthood: Design or Accident?—Michael Fielding. Vanguard Press, New York, 1935.
2. Birth Control: Its Use and Misuse.—Dorothy D. Bromley, Harper and Brothers, New York, 1934.
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11. Report of the Economic Survey Committee on "Clinic Abuse".—Bull. St. Louis M. Soc., 26:190 (Jan. 8), 1932.
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The Over-Crowding of the Medical Profession

ARTHUR DEAN BEVAN, M. D.
Chicago, Illinois

One of the most important problems now confronting the medical profession of this country is the over-crowding of the profession. This over-crowding is so great that it has become a menace both to the profession and to the public. It is a menace to the profession in that due, in part, at least, to this over-crowding it is difficult for a large number of medical men to make a living. It is a menace to the public in that the fierce competition has had a tendency to commercialize the profession and lower the standards of medical ethics and medical practice.

I have been for many years intensely interested in medical education. In 1902, when I was made chairman of the Committee on Medical Education of the American Medical Association, our committee studied the matter carefully and came to the conclusion that the study of medical education was so vast a problem that little could be accomplished by a committee, the personnel of which was changed each year. It became perfectly clear, when the problem was analyzed, that we needed a national influence and control, and that under our constitutional form of government this could not be exercised by the Federal Government because the right to decide who should practice medicine belonged to the individual states.

It was felt that the best solution was for the American Medical Association to assume this function of national influence and control through the creation of a Council on Medical Education. This has proven to be a wise solution. The Council on Medical Education has had no legal power to enforce its recommendations, yet, on the whole, its recommendations have been so wise and logical and so clearly in the interests of the medical profession and the public that they have been accepted and adopted quite as fully as though they were legal requirements. It would be well for all of us, especially in these times of rapidly changing conditions, to realize that all matters pertaining to medicine belong to the individual states and not to the Federal Government. The American Medical Association, through its Council on Medical Education and Hospitals, has done and is doing a splendid service for the medical profession and for the people of the entire country in elevating the standards of medical education and medical practice.

In addition to the influence exerted by the Council on Medical Education in elevating the standards of medical education in this country, there are two other organizations which have exerted great influence and, to a certain extent, control of medical education. They are, first, the Association of American Medical Colleges, and second, the State Boards of Medical Examiners.

The present Association of American Medical Colleges was organized in 1890. After the creation of the Council on Medical Education in 1904, the Association of American Medical Colleges has played a very important part in the re-organization of medical education in this country. As the number of medical colleges was gradually reduced from one hundred and sixty to about eighty, the Association of American Medical Colleges accepted as members of the Association only the better schools—the schools that were recognized as acceptable and qualified to teach medicine properly. It became more and more, year after year, a very important factor in the campaign for improving the standards of medical education.

In 1926, the Association began the publication of a Bulletin and this became the Journal in 1929. It is published bimonthly and has a large circulation in the United States and Canada and is also sent to some European countries. The Association has a complete record of all applicants and all applications of students beginning the study of medicine, of their accomplishment in medical schools year by year, and many other valuable records which are accessible to all of the medical colleges and state boards, and have proven to be of great service in the selection of students.

The Federation of State Medical Boards was organized in 1913 and has proven to be a very important factor in the control of medical licensure and in the elevation of medical standards. Each year the *Journal of the American Medical Association* publishes a State Board Number. The last number was published April 25, 1936. It is the annual presentation of the licensure statistics collected by the Council on Medical Education and Hospitals of the American Medical Association. It gives in detail the number of individuals licensed in the various states. For the purposes of this research on the "Over-Crowding of the Medical Profession," I found some very instructive evidence in this report on page 1483, under the heading "Candidates Added to the Profession," and I cite briefly the following:

"Altogether, 5,500 were added to the profession in the year 1935 as contrasted with approximately 4000 deaths in the profession that occurred that same year. These figures indicate that at least 1500 have been added to the already crowded medical profession."

If this rate of increase is allowed to continue, the over-crowding will become a greater and greater menace to both the profession and the public. In order to prevent the over-crowding from becoming greater than it is at present, it will be necessary for the medical schools of the country to agree to reduce the total number of graduates by about 1,500; that is, the difference between the 5,500 men now added to the profession each year, minus 4,000—the number removed by death.

The practical solution would seem to be for the medical schools to reduce the number of students in their entering classes by 5 per cent each year for the next five years. I cite these statistics as a definite concrete piece of evidence of the increasing over-crowding of the medical profession.

The investigation of this question of the over-crowding of the medical profession has resulted in obtaining some interesting and important evidence in regard to this whole situation. The following is a brief summary:

There are in the United States 165,000 medical practitioners. This is about one licensed practitioner of medicine to 760 people, being the largest percentage found in any country of the world. With the increase of means of communication and of transportation and the increased number of hospitals, it is safe to say that on an average one medical practitioner can provide adequate medical care for from 1000 to 1200 people; since the depression, beginning in 1929, a large percentage of the physicians of the country, possibly from 40 to 50 per cent, are not able to make a fair living and support and educate their families and put aside something for old age. This struggle for existence (and this fact cannot be emphasized too strongly) has definitely tended to commercialize the practice of medicine and lower the ethical standards of practice.

Medicine is a profession. It differs sharply from most commercial pursuits. Medicine requires not only a proper scientific training but also certain other qualifications which are equally essential. The physician and surgeon is often the court of last resort; the life and health of the patient is often in his hands. The physician must cultivate and acquire the judicial attitude, the judicial quality of mind, in order that he may decide properly the important questions that confront him. Above all, the physician must be a man of character. He must in his life and professional work accept a high code of ethics which controls all of his actions. He must always and at all times be governed by the code of ethics and practice the Golden Rule. He must not commercialize his profession.

The evidence obtainable shows a definite over-crowding of the medical profession. Both the people and the medical profession would be much better off if by a well-organized plan the poorer qualified and least desir-

able 10 or 15 per cent of the medical practitioners could gradually be eliminated, and the number of doctors gradually reduced, eventually to about one to a thousand persons.

To accomplish this, we must elevate the standards of requirements demanded to secure a medical education and a license to practice medicine. This should not mean an increase in the length of the medical course but a decrease in the number of medical students by an increase in the educational standards and the standards of personal fitness. The American Medical Association has already demonstrated its ability to reduce the number of medical students by elevating the educational requirements. In 1904, when the Council on Medical Education was created we had 28,000 medical students; by lengthening the course and elevating the requirements this number was reduced in 1920 to less than 14,000. In the last fifteen years this number has gradually increased to about 23,000, and the number of graduates into medicine from the low point of 2,520 in 1922 increased to 5,101 in 1935.

The over-crowding of the profession is a serious problem and one which must be solved. We must elevate both the standards of scholarship and the standards of character and fitness to study and practice medicine. These standards must be sufficiently high to eliminate the undesirable students now entering our medical schools and who graduate and obtain a license to practice.

In the Educational Number of the *Journal of the American Medical Association* of August 31, 1935, in the "Annual Presentation of Educational Data," this subject is reviewed and the following statement is made:

"During the last ten years the number of medical students has greatly increased. A number of factors have contributed to the result which has created a much larger body of students who aspire to a professional career. In law schools a corresponding increase in the number of students has also been observed in recent years. Financial stringency has caused some medical schools to rely more largely on the income from students fees and larger numbers have been accepted for the sake of gaining additional revenue. Unfortunately, in most instances the teaching staff has not been correspondingly strengthened or the physical plant commensurately enlarged. In consequence, it has been found that too often faculties are undermanned and laboratories over-crowded. A more serious feature of increasing enrollments is the failure to maintain high academic standards in the selection of students. Too many applicants with poor scholastic records have been accepted with inevitable impairment of the efficiency of the school."

The Association of American Medical Colleges has been of great service in elevating the standards of medical education. It has made since 1926 eight annual studies of the number of applications made for admission to the freshman class of seventy-nine medical schools. No study was made in the years 1930 and 1931. There has been a steady increase in the number of applications from year to year; also in the number of applicants. Many students have made multiple applications, many as high as ten or even more—one man made forty-one applications. One can obtain a good conception of the situation from a study of Table I.

TABLE 1. SUMMARY OF TOTAL APPLICATIONS AND APPLICANTS FOR YEARS 1933, 1934 AND 1935.

	1933	1934	1935
Number of applications	29,705	32,321	34,427
Number of applicants	12,128	12,779	12,740

New York, Pennsylvania and Illinois lead in the number of applicants and applications. New York State furnishes the largest number of applicants, about 30 per cent of the total; most of these come from New York City. In 1933, there were 6,650 students in the freshman year; in 1934, 6,754 students (the largest freshman class ever matriculated); in 1935, 6,170 students matriculated. This is a falling off of 584. This is a most encouraging sign and is due to the efforts of the Council on Medical Education of the American Medical Association and the Association of American Medical Schools and the Federation of State Medical Boards.

It will be seen that of the twelve to thirteen thousand applicants each year less than half actually begin the study of medicine. More and more students are clamoring to enter our medical schools and this in spite of the fact that the medical profession is already greatly over-crowded and in spite of the fact that not more than half of the doctors of the country are making even a fair living.

THE PROBLEM OF THE NEW YORK STUDENTS

There is one phase of this problem which must be studied carefully and that is the great increase in the number of applications from New York City. An investigation of this situation shows that this is in large part due to the great number of Jewish applicants. The number of Jewish applicants has increased steadily in the last ten years. Ten years ago the number of Jewish students was about 10 per cent of the total number; today it is about 20 per cent. This subject has been studied carefully by several Jewish leaders. Two studies of special value have been made:

One by Rabbi Lazaron of Baltimore, and one by Harold Rypins, the secretary of the New York State Board of Medical Examiners. Rabbi Lazaron finds from his investigations (a study of the published lists of the scholastic aptitude tests, December, 1933) that 32 per cent of the total number of applicants for entrance to the freshman classes of our medical schools were Jewish.

The leaders of Jewish thought and culture who have studied this question are making a determined effort through Jewish publications and societies to lower the great numbers of Jewish students who are crowding into medicine. One must be favorably impressed by the fair and logical way in which they have attacked this problem. As Rabbi Lazaron very well puts it, "The Jewish aspect of the matter is but a part of the larger problem of too many doctors; but the increasing number of Jewish youth seeking entrance into an already over-crowded field not only aggravates the general difficulty but creates a problem for the Jewish people as well as for the Jewish medical student. Jews as such are not entitled any more than any other group to a greater or less percentage of doctors. The only justification for discussing percentages at all is because we Jews, ourselves, desire to try to solve the problem before a rising resentment shall take it out of our hands."

Dr. Harold Rypins, who has made an exhaustive study of this situation in New York, says in his excellent report on the Jewish Medical Student:

"To make my position in reference to the admission of Jewish students to medical schools in New York City absolutely clear, I shall begin by stating two conclusions based upon data which I shall present. First, that there is no evidence of racial or religious discrimination in the admission of applicants to medical schools, either generally throughout the country or particularly in New York City; and second, that because of the peculiar geographic distribution of the Jews the case of Jewish students in New York City seeking admission to the study of medicine presents a special problem, deserving special consideration, the solution of which will be hindered rather than advanced by unfounded claims of racial or religious prejudice,—although Jews compose only 3.5 per cent of the entire population, nearly 42 per cent of all the Jews in the United States are in New York City. Seventeen per cent of all the medical students in the country are Jewish, which speaks very well for the quality of the Jewish applicants and certainly excludes the possibility of any general anti-semitic discrimination. Since the Jews form only 3.5 per cent of the total population of the country the fact that they are selected to fill 17 per cent of

the openings in medical schools throughout the country is the best evidence against the allegation of religious discrimination."

One of the chief causes of the over-crowding of the medical profession is the fact that a number of the medical schools of the country are admitting to their classes a larger number of students than they can properly teach with their facilities, equipment and instructors. Many of these schools know that they are taking more students than they can properly teach, but in spite of this knowledge, they continue to increase their classes because of the pressure of the huge number of applicants clamoring for admission and because they need additional students' fees to pay the running expenses of the school.

In some institutions, especially state universities, the presidents and the trustees urge the admission of more and more students because of the political pressure brought to bear on them. These presidents and trustees are doing a great injury to the people of this country and the people of their own states by turning out a larger number of medical men than are needed. They are over-crowding the profession of medicine; a certain percentage of these men are poorly trained and incompetent and are a menace to the medical profession and to the public. The universities must be made to see this fact. They must be shown that the over-crowding of the medical profession with incompetent men is due, in large part, to the over-crowding of their own medical schools with undesirable students. They must be made to see their own responsibility for this unfortunate situation. They should take steps to reduce the over-crowding and eliminate the least desirable students; the plea of some medical schools is that in the territory in which they are located there is a dearth of doctors. They say that in some localities there are many towns of four or five-hundred population without a doctor, and they say that they should educate more and more doctors to fill this demand. This is a matter of distribution and this situation would still exist in many sections of the country even though we doubled the number of doctors.

CONCLUSIONS

1. Investigation has shown that there is a great and increasing over-crowding of the medical profession and that this has become a menace both to the profession and to the public.

2. This condition can be relieved by reducing the number of students entering our medical schools and the number who are licensed by state boards.

3. This reduction can best be accomplished by having the medical schools reduce the number of students accepted to the numbers which they have facilities to care for properly.

4. The medical schools and the state boards should make their standards of requirements for graduation and licensure, from the standpoint of scholarship and character and general fitness to practice medicine, so high that they will eliminate the 10 per cent or more of the poorest and least desirable men who are now entering the profession.

5. In the present over-crowded condition no group should be permitted to enter medicine in such numbers as to crowd out of medicine the members of other groups who desire to enter. No group should be discriminated against. The members of all groups must have the same rights and opportunities.

6. The program which would correct this situation might be briefly summarized as follows:

The medical schools and the State Boards should unite in an effort to prevent any further increase in the over-crowding of the medical profession. Instead of admitting each year 6000 or more men to the profession, as they are doing at present, admit no more than about 4000, the number removed by death and retirement. It will take several years to bring about this balance. This plan is now in operation in some of the Scandinavian countries, and has proven to be a success. It, obviously, will be necessary to establish such a balance before any serious effort is made to reduce the present proportion of practitioners of medicine to the population of the country which is, as has already been pointed out, one practitioner to seven hundred and sixty people, the largest percentage found in any country in the world.

The dangers of over-crowding the medical profession should be presented fully and fairly with the hope of creating a public opinion which may be of service in correcting this condition.

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Entrance Requirements of Medical Colleges

A check on the published entrance requirements of seventy-five approved medical schools in the United States discloses that thirty require two years of approved college work; two, require a minimum of two years but this minimum is adhered to only in the case of applicants with exceptional scholarship records; five schools have a minimum of from 62 to 72 hours (62, 64, 65, 70 and 72, respectively); one school requires 85 hours, which requires virtually three years or two years and two summer sessions, or one additional semester and one summer session; thirty-six schools require three years, or 90 hours, of college work; one school has a flat requirement of a bachelor's degree.

As a matter of fact, however, most medical schools choose their students from among those applicants who have had more than two years of college work. Several schools select entirely from the bachelor group, although their published requirements are less than this—in some instances only two years of college work. Thus, of the approximately 6,200 freshmen for the college year 1935-1936, only 10 per cent had less than three years of college work and many of these had two years with an additional semester or one or more summer sessions. In the absence of definite information as to how much credit was allowed by the medical schools for this additional work, these students are classed in the group of two to three years of college work. Only about 7 per cent of all freshmen had the absolute minimum of two years of college work.

Year after year, the two year group has grown smaller in numbers. The selections from this group have been made with the utmost care thus ensuring a high quality of student from the standpoint of scholarship. The wisdom of this choice is borne out by the accomplishment of these students in the medical school. In other words, they represent a "hand picked" group.

Several medical schools which accept only three year college men insist that their alma mater agrees to confer a bachelor's degree on them after the successful completion of the freshman year in the medical school. Therefore, many more graduates hold the bachelor's degree than do entering freshmen.

Some students start on a combined six or seven years course and receive the bachelor's degree at the end of the freshman year.

On the whole, therefore, it is evident that students intending to study medicine are imbued with the idea that they need more than the minimum of two years of college work if the study of medicine is to be profitable and, perhaps, less difficult than it would be with less preparation. The number of students coming to the medical school with a bachelor's degree has been increasing steadily for a long time. More than one half of the freshman class falls into this group. The number of students with three years of preparation remains about the same; the two years group has grown smaller as the bachelor group has grown

larger. Many of the students take an additional semester or one or more summer sessions.

It has been urged that the requirements for admission to medical school be raised to three years of college work. In some states, the state university medical school is forced to admit acceptable students with no more than this minimum of preparation; some medical schools are convinced that if the requirements were raised some desirable students would be excluded, students who, for one or other reason, cannot go to college longer. However, inasmuch as only a very small number of students are concerned in the matter, it would seem that there is not urgent need for increasing the admission requirements. After all, they are set up for the purpose of aiding in securing students who it is believed will make good physicians and not as an insistence on a definite number of hours or credits. Other aids for selection are made use of by all medical schools, such as the aptitude test, personnel studies, psychiatric tests, etc., which safeguard selection to a considerable extent. Hence, raising the entrance requirements would not appear to be urgent at the moment.

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Teaching Program for Interns

One of the topics which is uppermost in the mind of medical educators today is the continued education of the graduate in medicine during his internship. It is an accepted axiom that the hospital is the clinical laboratory of the medical school, but until quite recently it has not functioned properly in that capacity. Interns have not been given the opportunity, under control and guidance of the medical school and the hospital authorities, administrative and professional, to continue their education. Some hospitals have asserted that they cannot do this. Medical schools have said that unless they have control of the organization and operation of continued education in the hospital they cannot be held responsible for what happens or does not happen. Nevertheless, it is possible for any hospital to organize sound teaching programs for interns which will meet with the approval of the medical school authorities.

The Hackley Hospital, Muskegon, Michigan—a 100 bed hospital, has shown that small hospitals (if small hospitals, why not the larger hospitals) can work up a real teaching schedule, one which will definitely and continue well the education of the intern. Only two interns serve this hospital, but they work under a well organized teaching program, one which will ensure sound, practical, useful education. The plan is described in detail by Dr. E. W. Lange, the pathologist and a member of the intern committee of Hackley Hospital in *Hospitals*, 10; 52 (Sept.), 1936. Other hospitals and medical schools should secure a copy of this plan for consideration and possible institution.

College News

Yale University Medical School

A gift of $50,000 has been received from the late Mrs. Grace W. Barrell to erect an addition to the university infirmary and $50,000 for its maintenance, also an endowment of $75,000, the income from which is to be used to assist three deserving students each year as a memorial for Mrs. Barrell's son, John, a former student at Yale who was drowned in 1916.

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Cornell University Medical College

The University has donated a site near the Medical College to the city of New York for a health center to be used jointly by the city for health promotion work and the medical college for the training of medical students.

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Western Reserve University School of Medicine

Dr. Wilton M. Krogman, associate professor of anthropology, received an award of $1,000 from the Reader's Digest for an article submitted in a contest for material. The title of his story is "The Skeleton Speaks." It was one of 43,280 articles submitted. It is a popular account of some of Dr. Krogman's medico-legal interpretations of crime.

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Columbia University College of Physicians and Surgeons

Dr. Charles A. Flood has been appointed assistant dean of the college to succeed Dr. Frederick T. van Beuren, Jr., who resigned. Dr. Virginia K. Frantz has been elected assistant professor of surgery and Dr. David Seegal assistant professor of medicine. New appointments: Dr. Samuel A. Cosgrove, clinical professor of obstetrics and Dr. Phillips Thygeson, assistant professor of ophthalmology.

Promotions: Samuel T. Orton, professor of neurology; James Burns Amberson, Jr., professor of clinical medicine; George E. Daniels, professor of clinical psychiatry; Martin H. Dawson, associate professor of medicine; John H. Dunnington, associate professor of ophthalmology; Harold T. Hyman, associate professor of pharmacology; Claus W. Jungeblut, professor of bacteriology; Robert L. Levy, professor of clinical medicine; Alvan L. Barach, assistant professor of clinical medicine; Rhoda W. Benham, Ph.D., assistant professor of dermatology; Richard M. Brickner, assistant professor of neurology; Thomas K. Davis, clinical professor of neurology; Paul Gross, assistant professor of dermatology; Halford Hallock, assistant professor of orthopedic surgery; Hubert S. Howe, clinical professor of neurology; George H. Hyslop, assistant clinical professor of neurology; Thomas H. Johnson, assistant professor of ophthalmology; Leonidas Lantizounis, assistant professor of orthopedic surgery; Charles A. McKendree, clinical professor of neurology; Irving H. Pardee, clinical professor of neurology; Lewis B. Robinson, assistant professor of dermatology; Leon A. Salmon, assistant clinical professor of neurology.

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Meharry Medical College

Dr. S. H. Freeman has returned to the college after spending a year taking postgraduate work under Dr. Arthur Steindler of Iowa City in orthopedic surgery. Dr. Freeman was given a fellowship for this course with the understand-

ing that he should return to Meharry Medical College and its hospital where he will be head of the orthopedic service, both in the outpatient and hospital services. Dr. E. T. Odom took a course in cardiology under Dr. Paul W. White, at the Massachusetts General Hospital, the Children's Hospital and the Good Samaritan Hospital. Dr. J. W. Jones attended a pediatric seminar from July 1 to August 15 at Infants' and Children's Hospital, Saluda, N. C.

A new member of the faculty is Dr. G. Norman Adamson, a graduate of Meharry Medical College in 1922. Dr. Adamson completed an internship at the John A. Andrew Memorial Hospital, Tuskegee Institute, Tuskegee, Alabama. From 1923 to 1931 Dr. Adamson practiced medicine at Ensley, Alabama, and in the Fall of 1931 he received financial assistance from the Julius Rosenwald Fund in the form of a fellowship at the University of Chicago, where he pursued postgraduate instruction in obstetrics and gynecology. From 1932 to 1936 he has practiced medicine in Chicago, where he also has been a member of the gynecological staff of the Provident Hospital and attendant prenatal physician of the Chicago Health Department, until he received appointment as acting director of obstetrics at Meharry Medical College.

Dr. Edward L. Turner came September 1st as professor of medicine and head of the division of medicine. During the past thirteen years Dr. Turner has been connected with the American University of Beirut, Syria, first, as head of the department of physiology and during the past six years as head of the department of internal medicine.

During the past four years Dr. Turner has been conducting an extensive investigation with the aid of a grant from the Rockefeller Foundation on the production of immunity against certain metozoan parasitic diseases. The investigation in Syria centered around the problem of hydatid diseases.

All the supervisors and teachers of the Nurse Training School of Meharry Medical College have taken courses in ward management and ward nursing education and in the curriculum and principles of teaching under Mrs. Kendall of Colorado State College of Education, Greely, Colorado. This is the first course of the kind that has been offered to supervisors and graduate nurses of the Negro group in the south.

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Jefferson Medical College

Dr. Edward J. Klopp, professor of surgery, died recently. His successor has not yet been appointed.

Dean Patterson returned from a tour of Scotland at which time he visited the medical schools in Glasgow and Edinburgh.

The 112th annual session was opened September 21. Dr. Thomas A. Shallow, professor of surgery, delivered an address entitled "Medical Progress."

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Long Island College of Medicine

The first Adam M. Miller Memorial Lecture was delivered on October 8th by Sir Joseph Barcroft, professor of physiology in Cambridge University, England. The title of his lecture was: "Certain Aspects of Embryo-Physiology."

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Harvard Medical School

A gift of $250,000 made by Mrs. Francis G. Lee, of Chicago, will establish the George Burgess Magrath Endowment for Legal Medicine to commemorate the brother of the donor, John G. M. Glessner, a Harvard alumnus, and his classmate, Dr. George Burgess Magrath, medical examiner of Suffolk County since 1907. Dr. Magrath is professor of legal medicine in the Harvard Medical School.

Wayne University College of Medicine

New appointments: Dr. Charles G. Johnston, professor and head of the department of surgery, attending surgeon and director of surgery in the Receiving Hospital; Dr. Gordon B. Myers, professor and head of the department of medicine; Dr. Hugo Freund, professor of clinical medicine; Dr. Thomas B. Cooley, professor and head of the department of pediatrics; Dr. Warren O. Nelson, professor and head of the department of anatomy; Dr. Ward Seeley, professor and head of the department of obstetrics and gynecology.

The college has been empowered to nominate the attending staff of the Receiving Hospital, the major teaching unit of the college. Teaching affiliations have been made with Harper, Grace and Eloise Hospitals, in which students will spend all of their time for one month of the senior year on the medical service by election. All of the teaching in pediatrics will be done at the Children's Hospital, where Dr. Cooley is chief of staff. It is hoped that in the near future the college will be empowered to nominate the staff at this hospital.

Eight teaching fellowships have been established in the fundamental branches. These fellows will give full time service as laboratory instructors and research workers.

The freshman class has been reduced to 65 new admissions. In addition, there are three repeaters and seven part time students, making a total of 75 students in this class for the 1936-1937 session. This represents a reduction of about 15 per cent from the registration of the previous year.

Other changes in progress are additional contacts with other hospitals in the community; the development of a graduate program; a revision of the teaching program and additional new appointments to the faculty.

University of Oklahoma School of Medicine

New appointments: William Hotchkiss Bailey, professor of medical jurisprudence; Charles Francis De Garis, professor of anatomy; LeRoy Downing Long, associate in surgery; George Onis Hazel, lecturer in hygiene and public health and head of the department, and associate in dermatology and syphilology; Egil T. Olsen, Charles M. Pearce and Henry Darcey, lecturer in hygiene and public health; Arthur Alfred Hellbaum, assistant professor of physiology.

The department of radiology has been separated from the department of dermatology and Dr. John Evans Heatley has been made professor of radiology. Dr. William Edgar Eastland has been made associate professor of therapeutic radiology. Syphilology has been separated from urology which now remains as a single department with Dr. Rex Bolend as professor of urology. Syphilology has been added to the department of dermatology headed by Dr. Everett Samuel Lain.

Twenty-five additional physicians have been appointed to the staff of the University Hospitals either on the House Service or in the Outpatient Department.

The faculty has recently lost three valuable instructors who have been with the medical school for many years; Dr. H. Coulter Todd, professor of otology, rhinology and laryngology, who died June 25, 1936; Dr. Arthur Brown Chase, consultant in cardiology and lecturer in medical ethics, who died July 20, and Dr. Samuel R. Cunningham, professor of orthopedic surgery, who died September 7, 1936.

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University of Arkansas School of Medicine

It has been proposed by the dean of the medical school, Dr. Vinsonhaler, that the Little Rock City Hospital be converted into a 200 bed charity hospital

to be supported by the state, the city and the county. The medical school, which adjoins the hospital, will have charge of the institution.

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University of Chicago Medical Schools

Edwin O. Jordan, for many years professor and head of the department of bacteriology, died recently. Dr. Jordan retired in 1933 but continued his research work.

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University of North Carolina School of Medicine

It is reported that the Division of Public Health has succeeded far beyond expectations. In the first course, fifteen public health officers, fourteen sanitary engineers and twenty-two sanitary officers were in attendance on the twelve weeks course. Fifty applicants have registered for the fall course.

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Boston University School of Medicine

A course for physical therapy technicians is given in cooperation with the Sargent College of Physical Education of Boston University. During the last two years of the four-year curriculum, a student may major in the field of physical therapy at Sargent College. Clinical work is done during the senior year in the Massachusetts General, Massachusetts Memorial and Cambridge Hospitals, the Massachusetts Industrial School for Crippled and Deformed Children, and in various doctors' offices.

Students who elect this course are those who, after having two years of foundation work in physical education, decide that their particular interest is in remedial work rather than in teaching. The value of physical therapy lies principally in the proper application of exercise, heat and massage, and is used extensively in the aftermath of many diseases or accidents which leave an individual crippled or disabled.

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University of Illinois College of Medicine

The college has received from the Rockefeller Foundation a fund of $15,000.00 per year for a period of three years to promote undergraduate instruction in psychiatry. This work is under the immediate supervision of Dr. H. Douglas Singer, professor and head of the department of psychiatry, and was begun September 1, 1936. The program in general involves the extension of psychiatric teaching into other departments of medicine, particularly that of internal medicine.

The seventh annual Charles Sumner Bacon Lectures will be given at the college by Dr. Frank W. Lynch, professor and head of the department of obstetrics and gynecology, University of California Medical School. The first lecture will be given Friday, October 16, at 5 p. m. on the subject of "Carcinoma of the Uterus." The second lecture will be given on Friday, October 23, 5 p. m., on the subject of "Uterine Fibroids."

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University of Vermont College of Medicine

New Appointments: Drs. R. C. Daggs, F. W. Dunihue and A. G. Gladstone and Mr. R. C. Fuller. Mr. Fuller will serve as a laboratory technician; the others will assist in teaching and do research work.

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Indiana University School of Medicine

Dr. Carl Habich has been appointed head of the department of gynecology succeeding the late Dr. Mendenhall. Dr. J. T. Witherspoon is in charge of research in the department.

Undergraduate Course in Forensic Medicine

New York University College of Medicine gives a required course in forensic medicine, consisting of six lectures, to all fourth year students. The course details the legalized authorities for the investigation of violent, suspicious and sudden death; the type of case reportable; the signs of death; identification; scientific detection of crime; violent deaths from asphyxia, infanticide, abortion, rape, etc.; sudden deaths from natural causes; deaths from poisoning; medico-legal jurisprudence, court proceedings, ordinary and expert testimony; industrial hazards and diseases; compensation courts, etc.

An elective course of twenty-five lectures consisting of a more detailed instruction in subjects covered in the six general lectures, and an elective course in medico-legal pathology given to a limited number of fourth year students in the office of the chief medical examiner of New York City. In this course, the student observes and assists at autopsies, etc. Dr. H. S. Martland, professor of forensic medicine in this institution, discusses the need for such training and urges that in the public interests, all medical colleges which can do so institute such courses to meet the demand for trained medical examiners—experts in forensic medicine. *New York St. J. Med.*, 36:1193 (Sept.), 1936.

◆ ◆

New York University College of Medicine

The Department of Forensic Medicine has been reorganized under the direction of Dr. Harrison Martland, who succeeded Dr. Charles Norris as Professor of Forensic Medicine in January 1936. In addition to undergraduate work, the department has developed graduate instruction leading to the degree of Med. Sc. D. and short, intensive courses in specialized branches of medico-legal work. The Charles Norris Fellowship in Forensic Medicine has been established which is open to candidates applying for work toward the degree.

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University of Buffalo School of Medicine

Dr. Edward A. Koch, dean, has also been made dean of the dental school. Dr. Elmer Heath, assistant professor of medicine, will serve as assistant dean of the medical school.

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Washington University School of Medicine

Dr. Howard A. McCordock, associate professor of pathology, has been appointed head of the department to succeed Dr. Leo Loeb who retired recently.

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New York Postgraduate Medical School

Henceforth, training in preparation for the practice of a specialty will be limited to residencies in the hospital, except in the departments of dermatology and radiology.

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University of Pennsylvania School of Medicine

The late Dr. James M. Anders, a former member of the faculty, provided in his will that after the death of his wife, $50,000 of his estate be given to the University of Pennsylvania to establish the James M. Anders Foundation in the Graduate School of Medicine.

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University of Iowa College of Medicine

Dr. Howard L. Beye, professor and head of the department of surgery, was killed in an automobile accident, September 29, while on his way to attend a county medical society meeting in Sioux City, Iowa.

Book News

A Practical Medical Dictionary

By Thomas L. Stedman. 13th Ed. William Wood & Company, Baltimore. 1936. Price, $7 and $7.50.

A thorough revision, giving the pronunciation and derivation of more than 15,000 modern medical and other scientific terms, including many new terms. A special new exclusive feature is the article on medical etymology which serves as a guide to the clearer understanding and remembrance of present terms and to the coining of new terms. It is an ideal reference work of special value to medical students. Profusely illustrated and presenting hundreds of useful tables.

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Textbook of Pathology

By Sir Robert Muir, Professor of Pathology, University of Glasgow. 4th Ed. William Wood & Company, Baltimore. 1936. Price, $10.

One of the best known and most authoritative textbooks of pathology, extensively used in medical schools and as a reference work.

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Textbook of Neuro-Anatomy

By Albert Kuntz, Professor of Micro-Anatomy, St. Louis University School of Medicine. 2d Ed. Lea & Febiger, Philadelphia. 1936. Price, $6.

A thorough revision including three new chapters and an outline of laboratory work. The new chapters deal with the evolution and comparative anatomy of the nervous system, myelinization and the peripheral and central spinal conduction pathways. The illustrative material has been improved by the addition of 125 illustrations, both new and redrawn. The laboratory outline includes a study of microscopic preparations of selected parts of the nervous system.

◆ ◆

Vascular Disorders of the Limbs

By Sir Thomas Lewis, in charge of Department of Clinical Research, University College Hospital, London. The Macmillan Company, New York. 1936. Price, $2.

Knowledge of disorders of the circulation of the limbs has increased considerably. Recognition of the different abnormal states has become easier and more certain; newer methods of treatment have been introduced. All of this the author discusses in a most readable manner thus facilitating the use of the subject matter by the student. It is in every sense a practical guide to the management of circulatory troubles in the limbs.

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Textbook of Pathology

By W. G. MacCallum, Professor of Pathology and Bacteriology, Johns Hopkins University. 6th Ed. W. B. Saunders Company, Philadelphia. 1936. Price, $10.

Complete revision by a master pathologist and master teacher. More and more this subject is presented from the side of clinical medicine, which is proper inasmuch as pathology is clinical medicine viewed from a slightly different angle. A deservedly popular textbook for the undergraduate medical student.

◆ ◆

Diseases of the Eye

By Sir John Herbert Parsons, Consulting Ophthalmic Surgeon, University College Hospital, London. 8th Ed. The Macmillan Company, New York. 1936. Price, $5.50.

Although not essentially different from the seventh edition, mention is made of recent physiological and chemical researches which bear on the eye, its diseases and their treatment, thus, bringing the text up to date.

◆ ◆

Bailey's Textbook of Histology

Revised and rewritten by a board of five editors chosen from the department of anatomy of the College of Physicians and Surgeons, Columbia University, of which Philip E. Smith, Ph.D., was the chief. 9th Ed. William Wood & Company, Baltimore, Md. 1936.

The essential difference of this from previous editions is that the authors have correlated structure with function, which is most desirable and in keeping with the teaching of today. This is a deservedly popular book.

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Principles of Biochemistry

By Albert P. Mathews, Andrew Carnegie Professor of Biochemistry, University of Cincinnati. William Wood & Company, Baltimore. 1936. Price, $4.40.

Previous writings by the author are well and favorably known. This is an entirely new and "shorter" work, in which the author has correlated and synthesized facts, to present in an easily comprehended manner the finer structure and coordinated chemistry of the human body. All practical exercises have been omitted, also references to the literature. It is a textbook for medical students who have not time to consult for themselves much of the original literature. The book is dedicated to "all students of medicine" who will appreciate it.

◆ ◆

Textbook of Physiology

By William H. Howell, Emeritus Professor of Physiology, Johns Hopkins University. 13th Ed. W. B. Saunders Company, Philadelphia. 1936. Price, $7.

This book is so well and favorably known that it requires neither introduction nor comment. It is, and doubtless will long remain, the standard and most widely used teaching text. The present edition has been thoroughly revised.

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Manual of Pharmacology

By Torald Sollmann, Professor of Pharmacology and Materia Medica, Western Reserve University School of Medicine. 5th Ed. W. B. Saunders Company, Philadelphia. 1936. Price, $7.50.

Thoroughly revised and reset to conform to such changes as have been made in recent years in the study of drugs and their uses. Deservedly the most widely used textbook on the subject.

◆ ◆

Chemical Procedures for Clinical Laboratories

By Marjorie R. Mattice, Assistant Professor of Clinical Pathology, New York Postgraduate Medical School, Columbia University. Lea & Febiger, Philadelphia. 1936. Price, $6.50.

This book covers every phase of the chemical examination of blood, urine, gastro-intestinal secretions, cerebrospinal fluid, effusions, and other body fluids. One of its outstanding characteristics is the number of original observations. The descriptions are clear, concise and easily applied to practice. Students should find the book valuable, especially during their clinical clerkships.

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Textbook of Obstetrics

By Edward A. Schuman, M. D., Professor of Obstetrics, University of Pennsylvania School of Medicine. W. B. Saunders Company, Philadelphia. Price, $6.50.

Medical students will welcome this book. The text is concise; discussion, historical facts and other unessentials

in a book of this kind have been omitted. It is not bulky; it is well illustrated; the price is not large—all attractive to the poor student.

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Starling's Principles of Human Physiology

Revised by C. L. Evans, Jodrell Professor of Physiology in University College and H. Hartridge, Professor of Physiology in St. Bartholomew's College, London, 7th Ed. Lea & Febiger, Philadelphia. 1936. Price, $8.75.

This edition presents a comprehensive and accurate picture of physiology as it stands today, offering in one volume a firm foundation for the understanding of the healthy body. The revision is thorough in every way thus continuing this work as one of the standard textbooks on this subject.

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The Art of Treatment

By William R. Houston, formerly Professor of Clinical Medicine, University of Georgia School of Medicine. The Macmillan Company, New York. 1936. Price, $5.

The design of this book is to encourage therapeutic thinking; to emphasize the method of approach to the problem rather than the dogmatic solution. Therefore, this is not a textbook of therapeutics in the usual sense, but a discussion of treatment as a whole on the assumption that the student is equipped with knowledge of fundamentals acquired in previous years in the medical school. The work is divided into seven "books," each consisting of a number of chapters. The first book is devoted to a discussion of the "art of treatment." Book 2: Patients who are to be treated chiefly by nursing care. Book 3: Specifics. Book 4: Conditions in which the chief therapeutic method is psychotherapy or guidance. Book 5: Diseases which impose a limitation on life as the condition of treatment. Book 6: Disorders in which physiological considerations guide treatment. Book 7: Conditions in which treatment is tentative and experimental. The author's style is very pleasing. Hence, the book is easily read. As a therapeutic text, it can be commended highly. It is full of wisdom and contains much information which every physician should know. It is quite likely that students will read every word in this book, and with profit, without regarding it as an obnoxious chore. How wonderful it would be if more textbooks so-called were written in this manner and from Dr. Houston's point of view.

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Roentgen Interpretation

By George W. Holmes, M. D., Clinical Professor of Roentgenology, Harvard Medical School, and Howard E. Ruggles, M. D., Clinical Professor of Roentgenology, University of California Medical School. 5th Ed. Lea & Febiger, Philadelphia. 1936. Price, $5.

A complete revision; surveying the field of roentgen diagnosis; with an excellent bibliography appended to each chapter; many splendid illustrations; indicating the pitfalls into which the beginner is likely to stumble. Practical; concise; good for further reference reading.

◆ ◆

Oral Diagnosis and Treatment Planning

By Kurt H. Thoma, D.M.D., Professor of Oral Pathology in Harvard University. W. B. Saunders Company, Philadelphia. 1936. Price, $6.

Primarily, this is a book for the dental student, but the author has not been unmindful of the fact that the medical student often is confronted by abnormal conditions of the teeth, gums, jaws, mouth and other oral tissues about which he should know something in order that his consultation with an oral surgeon can be carried on intelligently. For him this book will have value.

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